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CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Airline	25GSE-3062A, 25GSE-3063A, 25GSE-3081A, 35GSE-3074A, 35GSE-3085A, 35GSE-3087A Tel. Rec. Prod. Chg. Bul. 72	212-1
Airline	25WG-3060A, 25WG-3070A Tel. Rec.	212-2
Capehart	12F272M (Ch. CT-74) Tel. Rec.	212-3
Coronado	25TV2-43-9022C, 35TV2-43-9022C Tel. Rec. Prod. Chg. Bul. 72	212-1
Rauland	1961	212-4
Raytheon	CR-41, A, CR-42, A, CR-43, A (Ch. 4D16-A)	212-5
Sentinel	1U-343, 343	212-6
Silvertone	2110A, 2111, 2115B, 2150B, 2160, 2162 (Ch. 528.631, -1, Ch. 528.632, -1, -2, -3, -4, -5, Ch. 528.632A, -1, -2, -3, -5) Tel. Rec.	212-7
Sylvania	105, 200, 205, 250 Series (Ch. 1-504-1, -2, -4), 120, 126, 220, 225, 226, 275 Series (Ch. 1-510-1, -2, -4) Tel. Rec.	212-8
Westinghouse	H-737T17 (Ch. V-2232-2), H-740T21, H-742K21, H-743K21 (Ch. V-2233-1), H-750T21 (Ch. V-2233-3), H-751T21, H-752T21 (Ch. V-2233-2), H-753K21 (Ch. V-2233-3), H-754K21, H-755K21, H-756K21, H-757K21, H-758K21, H-759K21, H-760T21, H-760TU21, H-761T21, H-761TU21 (Ch. V-2233-2) Tel. Rec.	212-9
Zenith	K725, F, G (Ch. 7K01)	212-10

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 195

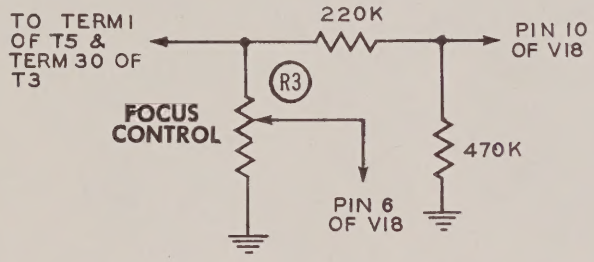
AIRLINE MODELS 25GSE-3062A, 25GSE-3063A, 25GSE-3081A, 35GSE-3074A, 35GSE-3085A, 35GSE-3087A

Three new Models have been added which are electrically identical to Airline Models 25GSE-3062A, 25GSE-3063A and 25GSE-3081A covered in Photofact Folder 2, Set 195. The new Models are 35GSE-3074A, 35GSE-3085A and 35GSE-3087A.

In later production the following circuit changes were made. Whenever applicable these changes may be made in the field on sets which have not been changed in production.

TO IMPROVE CONTRAST RANGE

A 220KΩ resistor was added, in series with the lead from the focus control (R3) to pin 10 of the picture tube and a 470KΩ resistor was added from pin 10 of the picture tube to ground. A partial schematic of this circuit is given below.



TO INCREASE THE RANGE OF THE VERTICAL SIZE CONTROL

A 2.2meg resistor was added from the open side of the vertical size control to ground

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 4 IN SET 183

CORONADO MODELS 25TV2-43-9022C, 35TV2-43-9022C

Coronado Models 25TV2-43-9022C and 35TV2-43-9022C are identical to Model 25TV2-43-9022B which is covered in Photofact Folder 4, Set 183 and Production Change Bulletin 65, Set 202-1 except the damper tube was changed from a 6W4GT to a 6AX4GT tube. This change was made to reduce radiation from the horizontal output circuit into nearby broadcast receivers.

When the 6AX4GT tube is used the lead from pin 3 of T3 (Horizontal Output Transformer) to pin 7 of V20 (Damper) is removed and pin 7 of V20 is grounded.

In some chassis a different power transformer (part #53C332) is used. This transformer is electrically identical to the one originally used (Part #53X325) except the rectifier tube (V22) is mounted in the top cover of the transformer.

(Continued on the Reverse Side)

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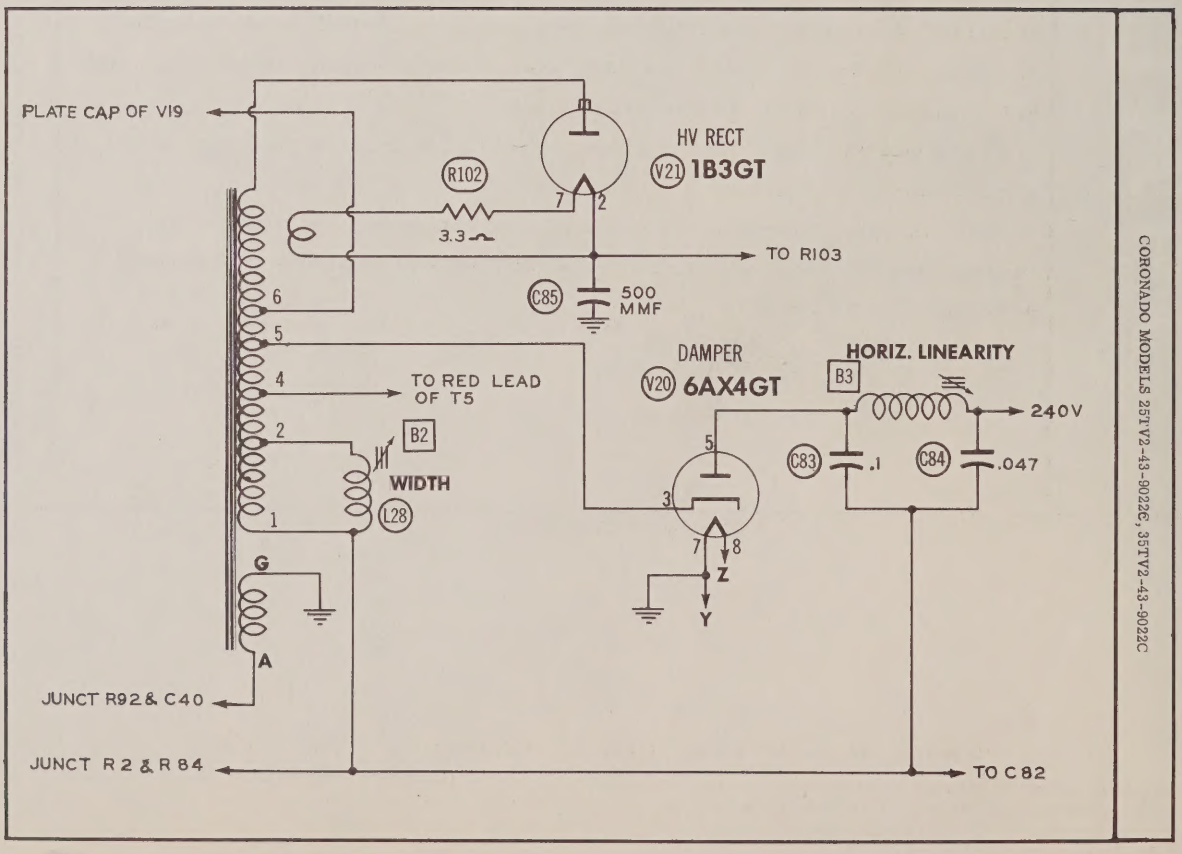
PLATE CAP OF V19
HV RECT
V21 1B3GT
R102
3.3
7
2
TO R103
C85
500
MMF
6
5
4
TO RED LEAD
OF T5
2
B2
WIDTH
L28
1
G
A
JUNCT R92 & C40
JUNCT R2 & R84
DAMPER
V20 6AX4GT
HORIZ. LINEARITY
B3
240V
5
3
7
8
Z
Y
C83 .1
C84 .047
TO C82
CORONADO MODELS 25TV2-43-9022E, 35TV2-43-9022C

PHOTOFACT* Folder

AIRLINE MODELS
25WG-3060A, 25WG-3070A

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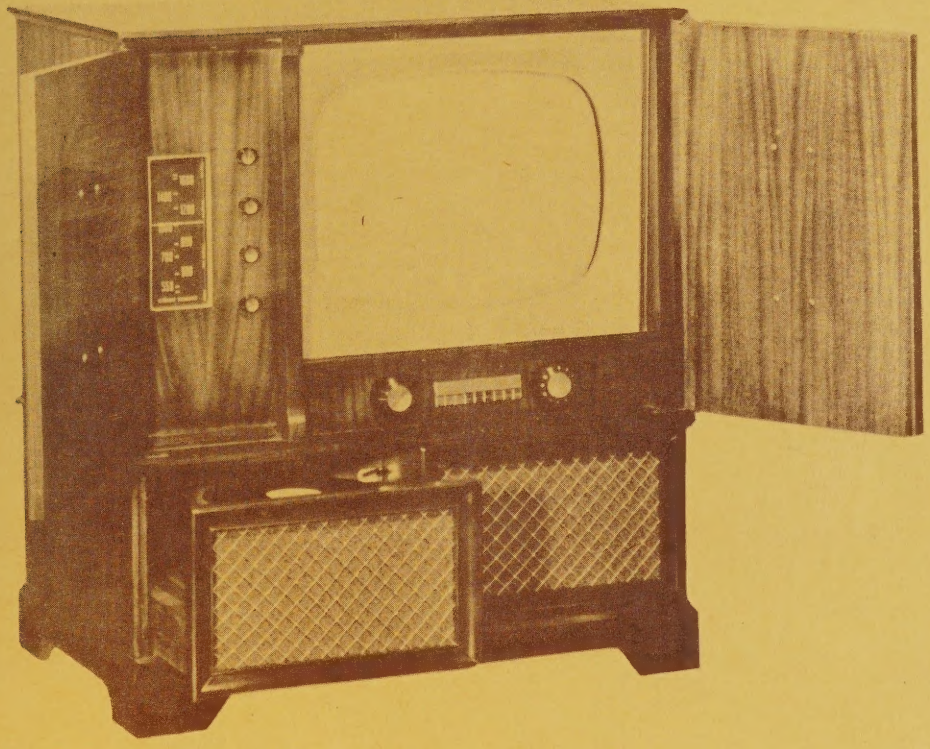
The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



AIRLINE MODELS
25WG-3060A, 25WG-3070A

MODEL 25WG-3060A

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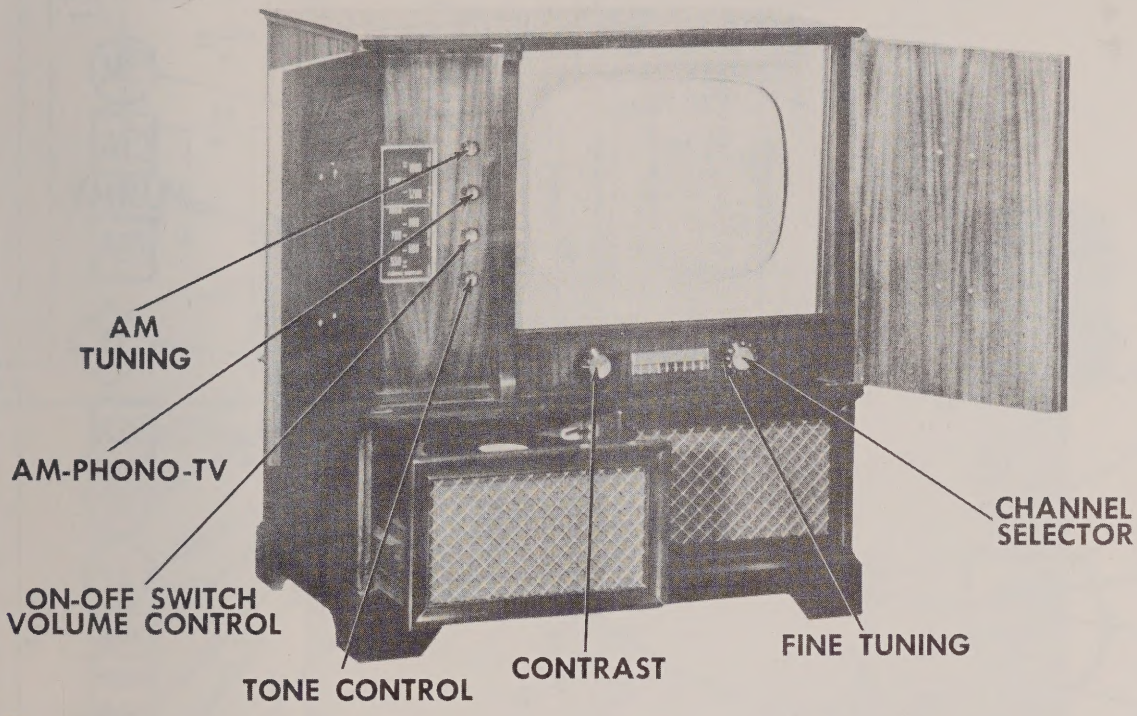
DATE 8-53 SET 212 FOLDER 2

AIRLINE MODELS 25WG-3060A, 25WG-3070A



AIRLINE MODELS 25WG-3060A, 25WG-3070A

AIRLINE MODEL 25WG-3060A

TRADE NAME	Airline Models 25WG-3060A, 25WG-3070A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	TV-AM-Phono Combination Receiver
TUBES	Twenty-Eight
POWER SUPPLY	110-120 Volts AC - 60 Cycle
RATING	(TV)1.72 Amp. @ 117 Volts AC,(Radio) .27 Amp. @ 117 Volts AC
TUNING RANGE	(TV) Channels 2 thru 13, Video IF 26.2MC, Sound IF 21.7MC (Intercarrier)(AM Radio) 540-1600KC, AM IF 455KC

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FOR SERVICE INFORMATION ON RECORD CHANGER, SEE V-M MODEL 950, PHOTOFACT SET 107, FOLDER 13, ALSO SUPPLEMENT SET 131, FOLDER 17 OR RECORD CHANGER MANUAL CM-3.

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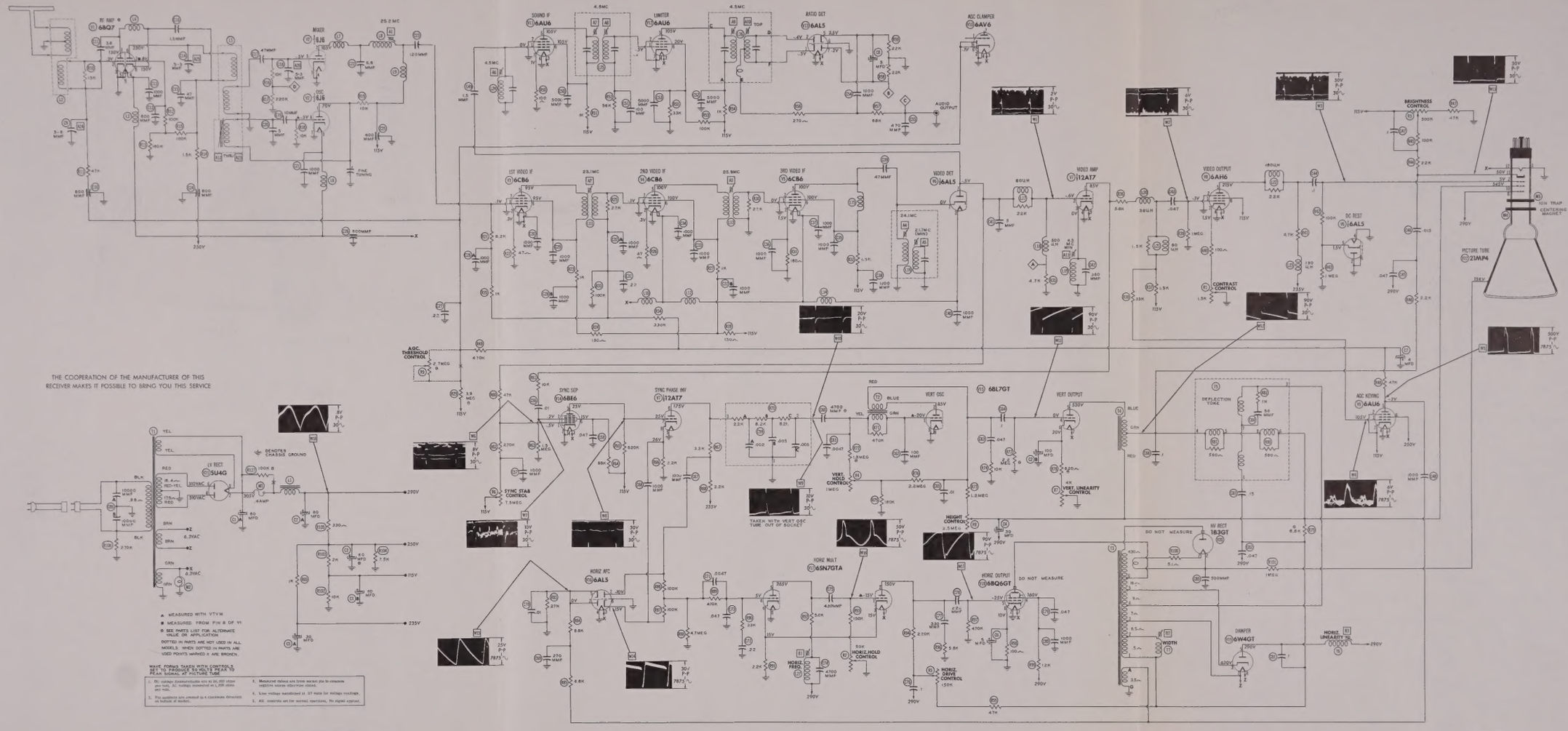
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
RF AMP 6BQ7
MIXER 6BJ6
OSC 6BJ6
FINE TUNING
SOUND IF 6AU6
LIMITER 6AU6
RATIO DET 6AL5
AGC CLAMPER 6AV6
AUDIO OUTPUT
1ST VIDEO IF 6CB6
2ND VIDEO IF 6CB6
3RD VIDEO IF 6CB6
VIDEO DET 6AL5
VIDEO AMP 12AT7
VIDEO OUTPUT 6AH6
DC REST 6AL5
CONTRAST CONTROL
BRIGHTNESS CONTROL
ION TRAP CENTERING MAGNET
PICTURE TUBE 21MP4
AGC THRESHOLD CONTROL
SYNC SEP 6BA6
SYNC PHASE INV 12AT7
SYNC STAB CONTROL
VERT OSC
VERT HOLD CONTROL
VERT OUTPUT 6BL7GT
VERT. LINEARITY CONTROL
HEIGHT CONTROL
DEFLECTION YOKE
AGC KEYING 6AU6
LV RECT 5U4G
DENOTES CHASSIS GROUND
HORIZ AFC 6AL5
HORIZ MULT 6SN7GTA
HORIZ OUTPUT 6BQ6GT
HORIZ DRIVE CONTROL
HORIZ HOLD CONTROL
HORIZ FREQ.
HV RECT 1B3GT
DAMPER 6W4GT
WIDTH
HORIZ LINEARITY
DO NOT MEASURE
TAKEN WITH VERT OSC TUBE OUT OF SOCKET
▲ MEASURED WITH VTVM
● MEASURED FROM PIN 8 OF V1
■ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED x ARE BROKEN.
WAVE FORMS TAKEN WITH CONTROLS SET FOR PROPER PICTURE AS FAR AS POSSIBLE, AT PICTURE TUBE
1. DC voltage readings/amplitude are to 60,000 ohms per volt, AC voltage measured on 5,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction as bottom of socket.
3. All controls set for normal operation, No signal applied.
4. Measured values are from socket pin to common negative unless otherwise stated.
5. Line voltage maintained at 117 volts for voltage readings.
6. All controls set for normal operation, No signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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TRUETONE
MODELS 2D1344A, B (Ch. 21MS536C)

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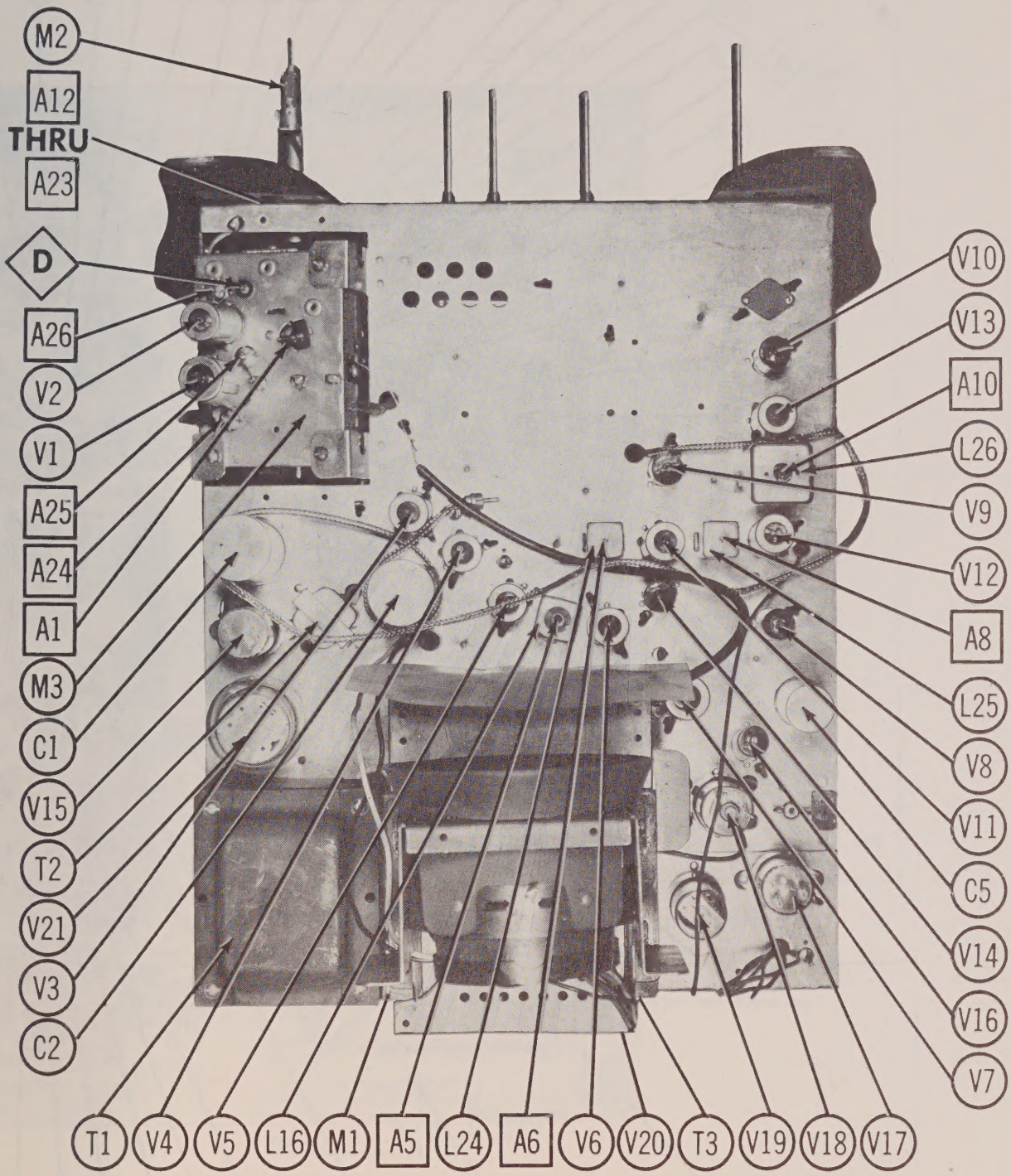

TV CHASSIS TOP VIEW

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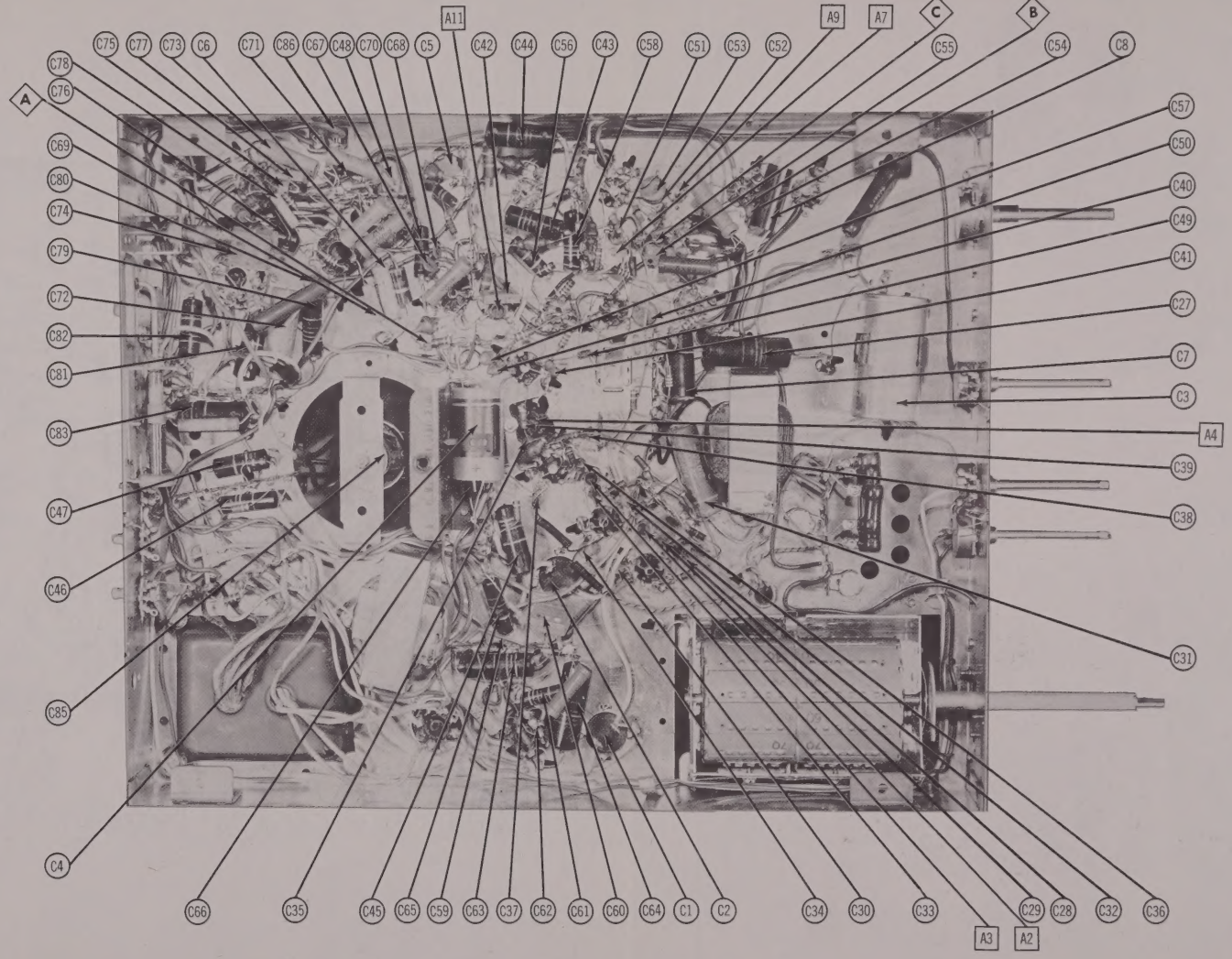

TV CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART

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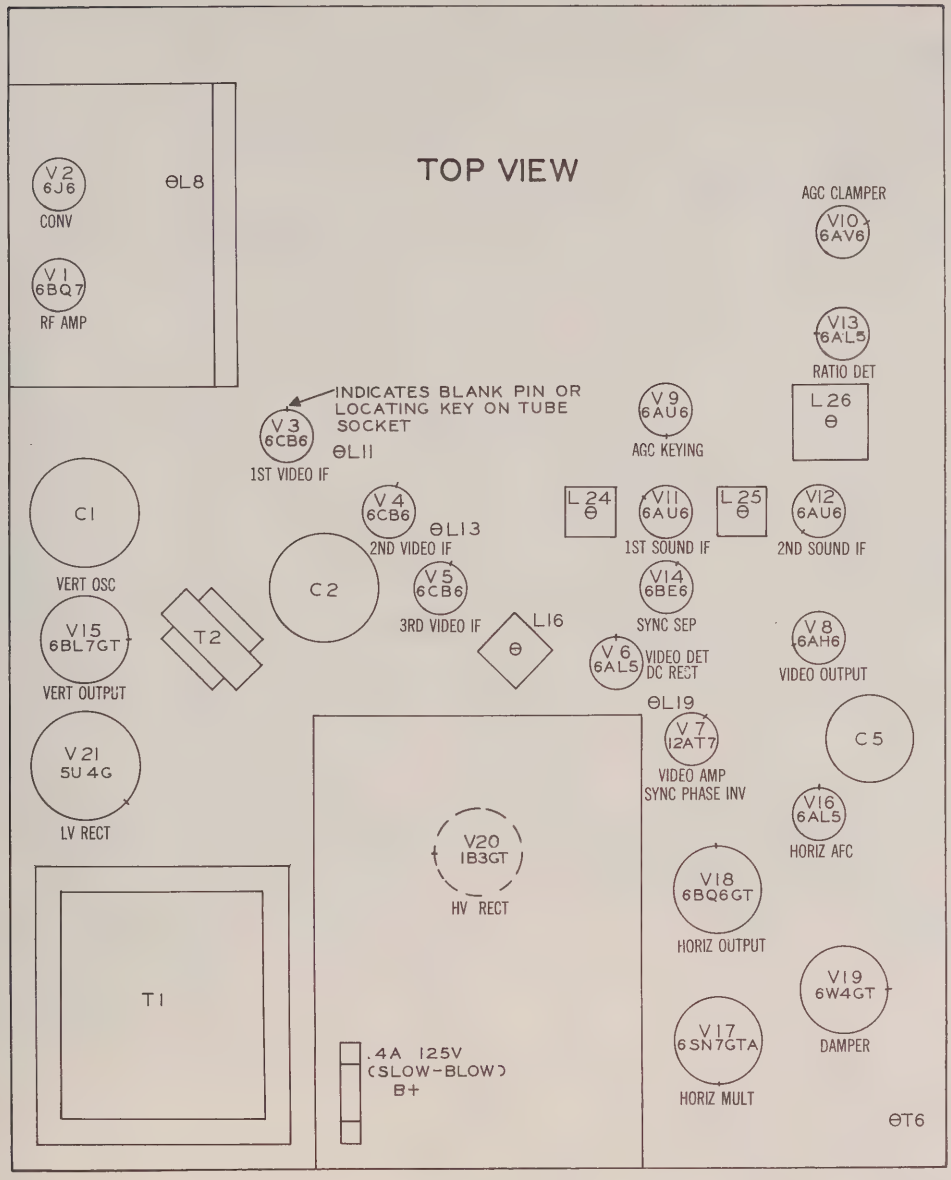


TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V21, Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster -V7, V8, V22
Has pic, no sound - V11, V12, V13, V26, V27
Overloaded picture - V9, V10

SYNC FAILURE
No vert. sync - V7, V15
No horiz. sync - V7, V16, V17
No vert. or horiz. sync - V7, V14

SWEEP FAILURE
No raster, has sound - V17, V18, V19, V20, V22
No vertical deflection - V15
Poor vert. linearity or foldover - V15
Poor horiz. linearity or foldover - V17, V18, V19
Narrow picture - V17, V18, V19, V20, V21
Vert. off freq. - V7, V15
Horiz. off freq. - V7, V16, V17

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal multi-vibrator tube, V17.

VIDEO IF ALIGNMENT

Remove the converter tube and replace with a 6J6 which has pin removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 4.5 volt battery to the ungrounded side of C31. Connect the positive lead to chassis.
When connecting VTVM use a filter consisting of 22KΩ in series with the high lead and .005MFD across the input terminals.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis	25.2MC	Any	DC probe to point ◇A Common to chassis.	A1	Adjust for maximum deflection. Attenuate generator output for not more than 2 Volts at VTVM.
2.	"	"	23.1MC	"	"	A2	"
3.	"	"	25.9MC	"	"	A3	"
4.	"	"	24.1MC	"	"	A4	"
5.	"	"	21.7MC	"	"	A5	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
Use filter in scope leads as used in VTVM alignment above.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.7MC 23.0MC 23.5MC 25.25MC 26.2MC	Any	Vert. Amp. to point ◇A. Low side to chassis.		Check for response similar to Fig. 1. If necessary retouch A1 thru A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.001MFD	High side to pin 7 (plate) of 6AL5 (V6). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point ◇B Common to chassis.	A6, A7, A8, A9	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point ◇C Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to pin 7 (plate) of 6AL5 (V6) Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point ◇B. Low side to chassis.	A6, A7, A8, A9	Disconnect stabilizer capacitor C8. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
8.	"	"	"	"	"	Vert. Amp. to point ◇C. Low side to chassis.	A10	Reconnect capacitor C8. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

Set contrast control at maximum contrast position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.001MFD	High side to pin 7 (plate) of 6AL5 (V6). Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig. 4) to pin 2 (grid) of picture tube. Common to chassis.	A11	Adjust for MINIMUM deflection.

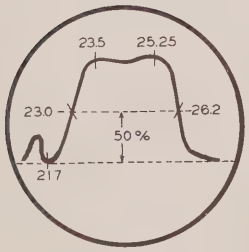


FIG. 1

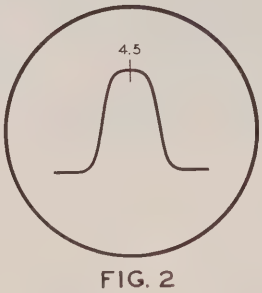


FIG. 2

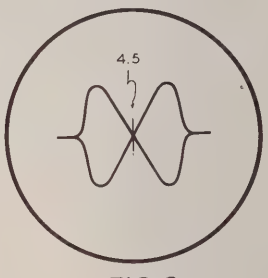


FIG. 3

TV ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect 4.5 volt bias battery as under Video IF Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 2120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A12	Adjust to place sound marker in trap notch as in Fig. 5. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A13	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A14	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A15	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A16	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A17	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A18	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A19	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A20	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A21	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A22	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A23	

RF AND MIXER ALIGNMENT

Remove 4.5 volt bias battery and connect 1.5 volt battery across C27 with positive lead to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (D). Low side to chassis.	A24, A25, A26	Adjust for response similar to Fig. 6.
12.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 6. If markers fall below 70% on any channel make compromise adjustments of A24, A25 and A26 with channel switch set to that channel then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

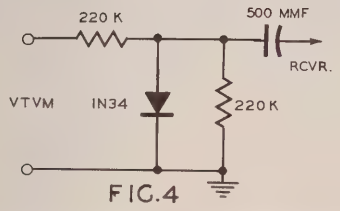


FIG.4

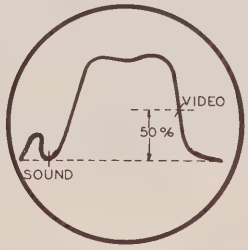


FIG.5

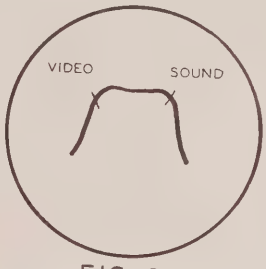


FIG. 6

RADIO ALIGNMENT INSTRUCTIONS

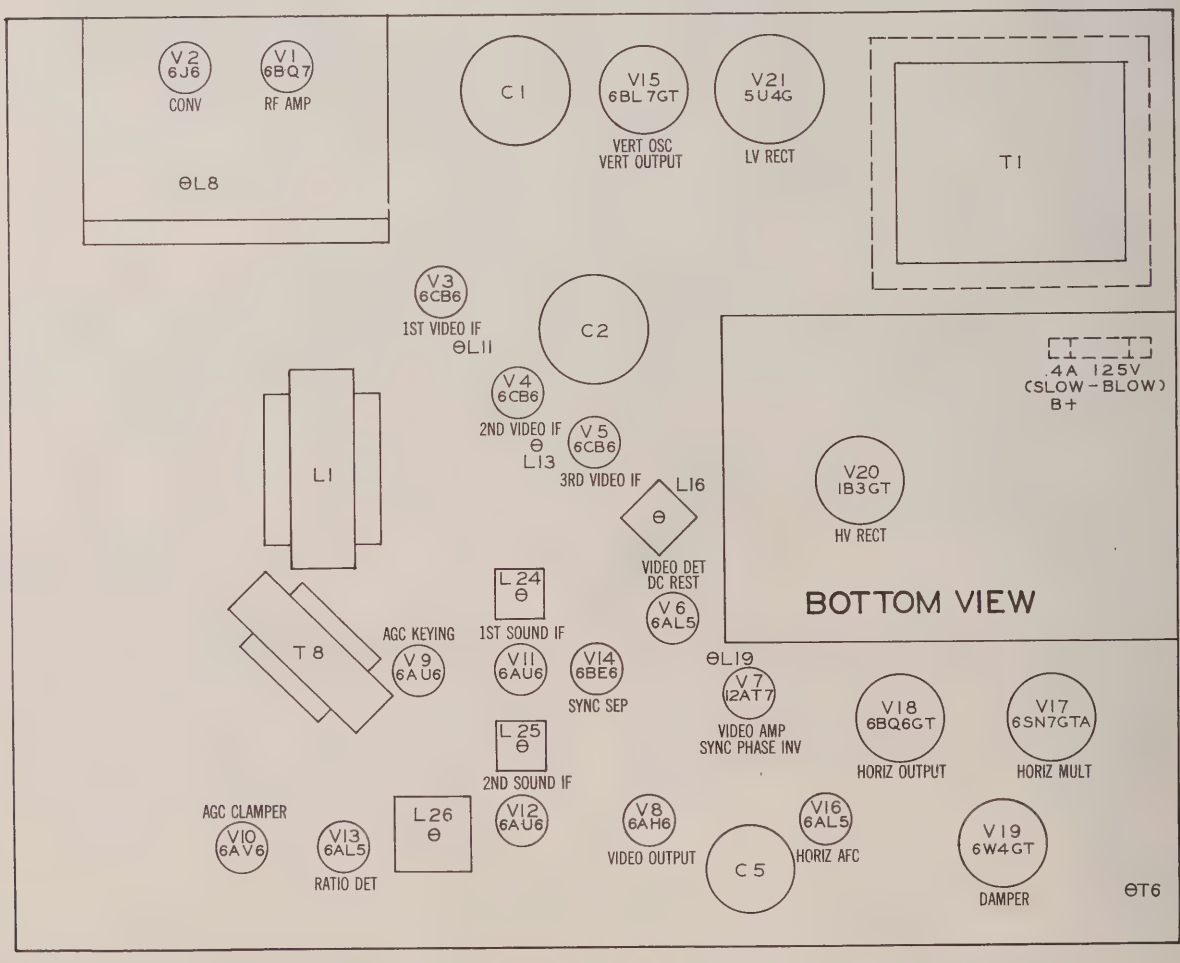
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
13.	.1MFD	High side to pin 7 (grid) of 6BE6 (V24). Low side to chassis.	455KC (400% Mod)	Radio	Tuning gang fully open.	Across voice coil.	A27, A28, A29, A30	Adjust for maximum output. Repeat adjustments untill no increase in output is noted.
14.	"	High side to pin 1 (grid) of 6BA6 (V23). Low side to chassis.	1620KC	"	"	"	A31	Adjust for maximum output.
15.	"	"	1400KC	"	Tune to 1400KC signal	"	A32	Adjust for maximum output while rocking tuning gang.
16.	50MMF	High side to external antenna terminal. Low side to chassis.	"	"	"	"	A33	Adjust for maximum output while rocking tuning gang. If pointer is not at 1400KC set pointer to 1400KC on the dial.

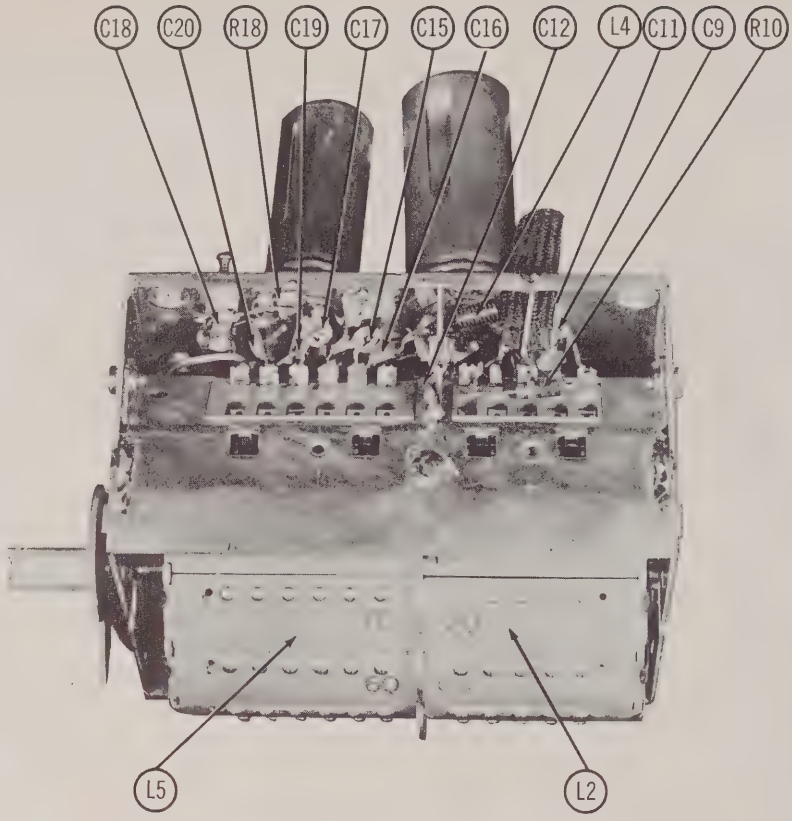
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	780KΩ	0Ω	.1Ω	0Ω	†1.9KΩ	†160KΩ	INF	0Ω
V 2	6J6	†12.4KΩ	†2.4KΩ	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	110KΩ	47Ω	.1Ω	0Ω	†3.6KΩ	†3.6KΩ	0Ω		
V 4	6CB6	100KΩ	47Ω	.1Ω	0Ω	†3.4KΩ	†3.4KΩ	0Ω		
V 5	6CB6	.2Ω	180Ω	.1Ω	0Ω	†3.8KΩ	†3.8KΩ	0Ω		
V 6	6AL5	.2Ω	0Ω	.1Ω	0Ω	1 Meg	0Ω	4.7KΩ		
V 7	12AT7	†9.5KΩ	4.7KΩ	.3Ω	0Ω	0Ω	†6.9KΩ	†820KΩ	2.2KΩ	1Ω
V 8	6AH6	1 Meg	0Ω	.1Ω	0Ω	†6.1KΩ	†2.4KΩ	1KΩ		
V 9	6AU6	†35KΩ	†2.3KΩ	.1Ω	0Ω	470KΩ	†380Ω	†2.3KΩ		
V 10	6AV6	INF	0Ω	.1Ω	0Ω	730KΩ	730KΩ	INF		
V 11	6AU6	3Ω	0Ω	.1Ω	0Ω	†3.4KΩ	†3.4KΩ	100Ω		
V 12	6AU6	56KΩ	0Ω	.1Ω	0Ω	†3.4KΩ	†25.5KΩ	0Ω		
V 13	6AL5	INF	INF	0Ω	.1Ω	22KΩ	0Ω	22KΩ		
V 14	6BE6	50KΩ	0Ω	.1Ω	0Ω	†820KΩ	†74KΩ	1.5Meg		
V 15	6SN7GTA	2.5Meg	▲2.7Meg	0Ω	2.2Meg	▲7KΩ	2.2KΩ	.1Ω	0Ω	
V 16	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	9KΩ	0Ω	9KΩ		
V 17	6SN7GTA	170KΩ	▲420KΩ	2.2KΩ	5.1Meg	†5.6KΩ	2.2KΩ	.1Ω	0Ω	
V 18	6BQ6GT	5.7KΩ	0Ω	INF	†12KΩ	470KΩ	▲200KΩ	.1Ω	100Ω	Top Cap ▲25Ω
V 19	6W4GT	▲51Ω	INF	1.2Meg	5.1Meg	†65Ω	▲51Ω	▲16Ω	▲16Ω	
V 20	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ▲455Ω
V 21	5U4G	INF	5KΩ	INF	17.5Ω	1.4KΩ	16.4Ω	INF	5KΩ	
V 22	21MP4	0Ω	1.1Meg	Pin 6 †50Ω	Pin 10 ▲6.8KΩ	Pin 11 †280KΩ	Pin 12 .1Ω			

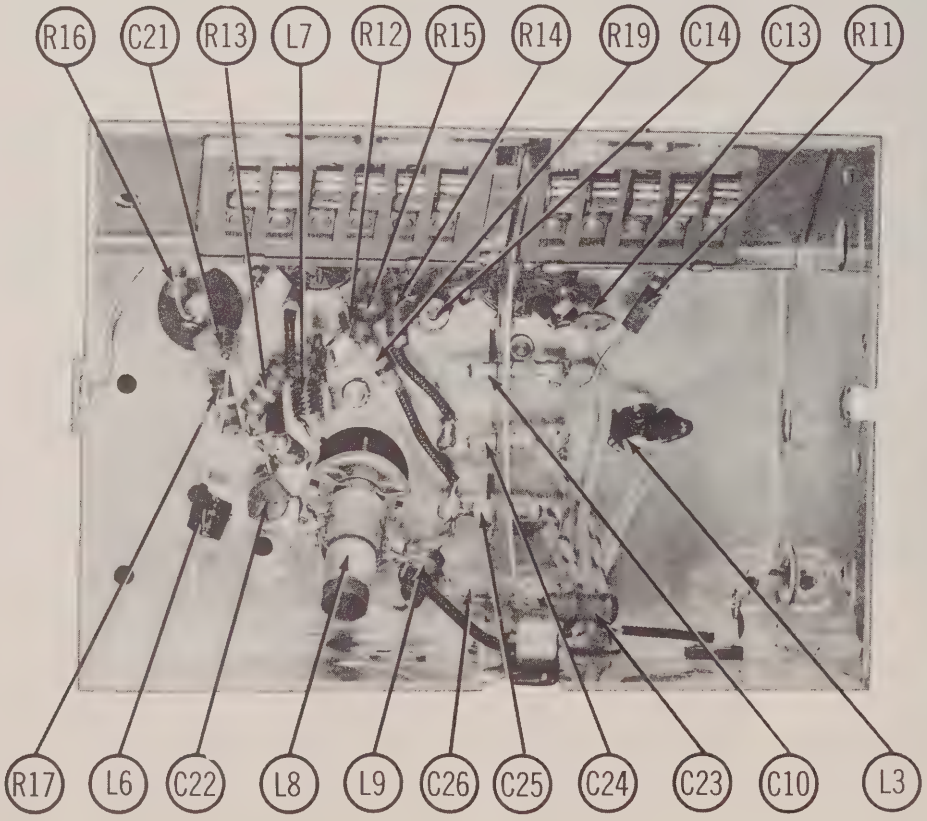
† MEASURED FROM PIN 8 OF V21.
▲ MEASURED FROM PIN 3 OF V19.



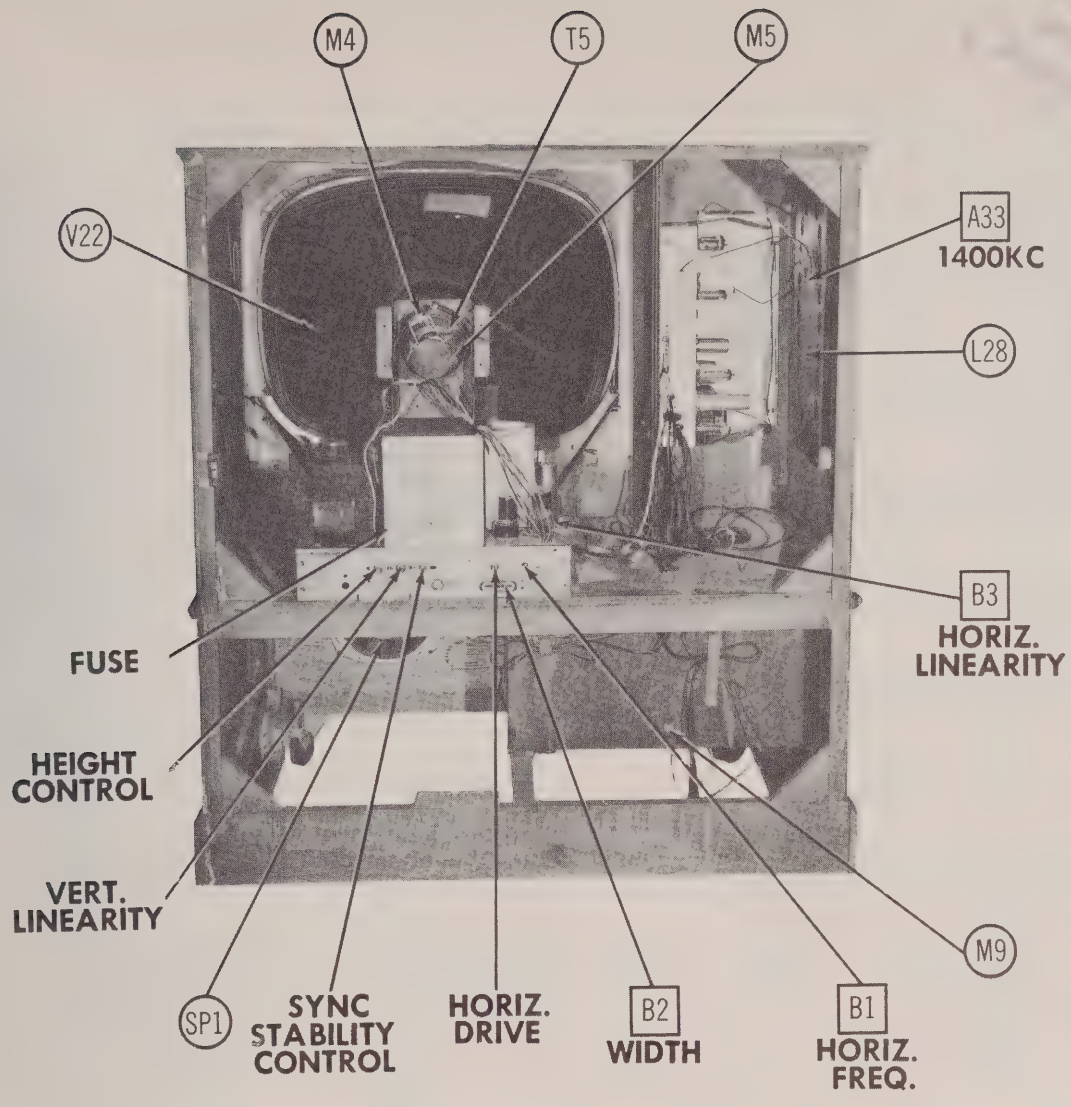
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Set the contrast control at minimum and advance the brightness control for normal brilliance.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal drive control clockwise as far as possible without the presence of vertical white lines or compression of the center of the picture.

Adjust the horizontal linearity slug (B3) for a picture that is symmetrical from left to right. If B3 or the horizontal drive control is adjusted recheck setting of B1.

If B3 is adjusted readjust the horizontal drive control.

SYNC STABILITY CONTROL ADJUSTMENT

Start from a fully counter clockwise position and turn the control slowly clockwise until a minimum amount of picture bending occurs.

In weak signal areas set the stability control for maximum picture stability.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Check horizontal deflection yoke for open. Check C83 for open.

INSUFFICIENT SWEEP

Substitute V17, V18, V19 and V21. Check waveform at W17.

If Satisfactory	If Unsatisfactory
Check C79, C80, C81, C82, T3 and other associated components.	Check C77 , C78, C76, R5 and other associated components.

DRIVE LINES

Substitute V17, V18 and V19. Check C76, R5, C77, C78 and other associated components.

COMPRESSED LEFT SIDE

Substitute V17, V18 and V19. Check adjustment of B2 and B3. Check T3, C81, C82 and other components associated with V18 and V19.

FOLDS

Substitute V18 and V19. Check C81, C82, T3 and other components associated with the horizontal output stage.

XMAS TREE EFFECT

Substitute V17. Check C74 for ppen. Check L27 for shorted turns.

VERTICAL

LOSS OF SWEEP

Substitute V15. Check T2, T4, C66, C64, R79 and other associated components. Check yoke for open or shorted windings.

INSUFFICIENT SWEEP

Substitute V15. Check T2, T4, yoke, C66, C64, R79, C2B, C4 and other components. associated with V15.

COMPRESSED AT BOTTOM

Substitute V15. Check C2B, C4, T4, yoke and other components of the vertical output stage.

COMPRESSED AT TOP

Substitute V15. Check C2B, C4, T4 and yoke.

FOLDS

Substitute V15. Check C63, C64, T4 and yoke.

EXCESSIVE VERTICAL FREQUENCY

Check C63 and C64 for open or change of value.

SYNC

HORIZONTAL

LOSS OF SYNC

Substitute V16 and V17. Check C67, C68, C70, C69, C71 and other components associated with V16 and V17.

CRITICAL SYNC

Substitute V16 and V17. Proceed as outlined under "HORIZONTAL, LOSS OF SYNC".

PULLING PICTURE

Check setting of sync stability control. Substitue V7 and V14. Check C71, C72 and C73.

VERTICAL

LOSS OF SYNC

Substitute V15. Check T2, C60 and the vertical integrator network. Check signal at W1 & W2 for signal overload and sync clipping.

CRITICAL SYNC

Substitute V7, V14 and V15. Check vertical integrator network, C60 and T2.

TRIGGERING

Substitute V7, V14 and V15. Check circuit near these tubes for filament lead dress.

VIDEO

LOSS OF VIDEO

Substitute V6, V7, V8 and V9. Check C43, C44 and other components associated with these stages. Check picture tube.

SOUND BARS

Check setting of local oscillator. Check adjustment of sound trap A11.

POOR RESOLUTION

Substitute V1, V3, V4, V5 and V6. Check video IF alignment. Check video IF components.

POOR CONTRAST

Substitute V6, V7 and V8. Check C43, C44, L17, L21 , L22 and picture tube. Check other components associated with V6, V7 and V8.

SMEAR

Substitute V6, V7 and V8. Check C43 and C44 for open or leaky. Check L17, L21, and L22 for open. Check R36, R37, R39 and R41 for change of value.

ONE BLACK BAR ACROSS PICTURE

Check RF utuner, Video IF, Video detector, Video amplifier and output tubes for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Substitute V11, V12, V13, V26, V27 and V28. Check stages of V26, V27 and V28 by switching to radio position. If sound is satisfactory, check audio IF alignment. Check alignment of ratio detector and components of audio IF and detector stages.

BUZZ

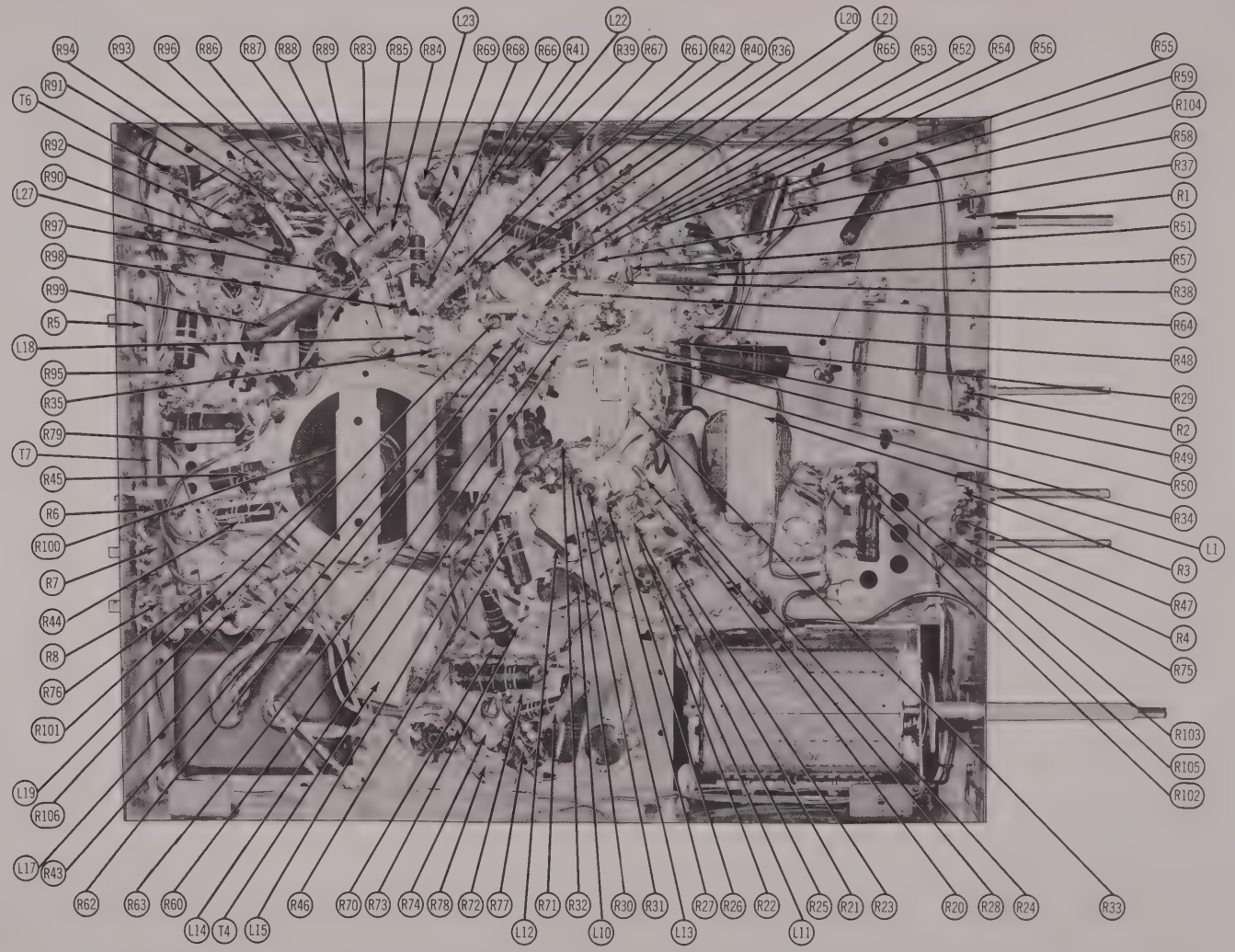
Align ratio detector as outlined in the alignment table. If buzz is still present substitute V13 and realign. Check C8 for leakage.

DISTORTED

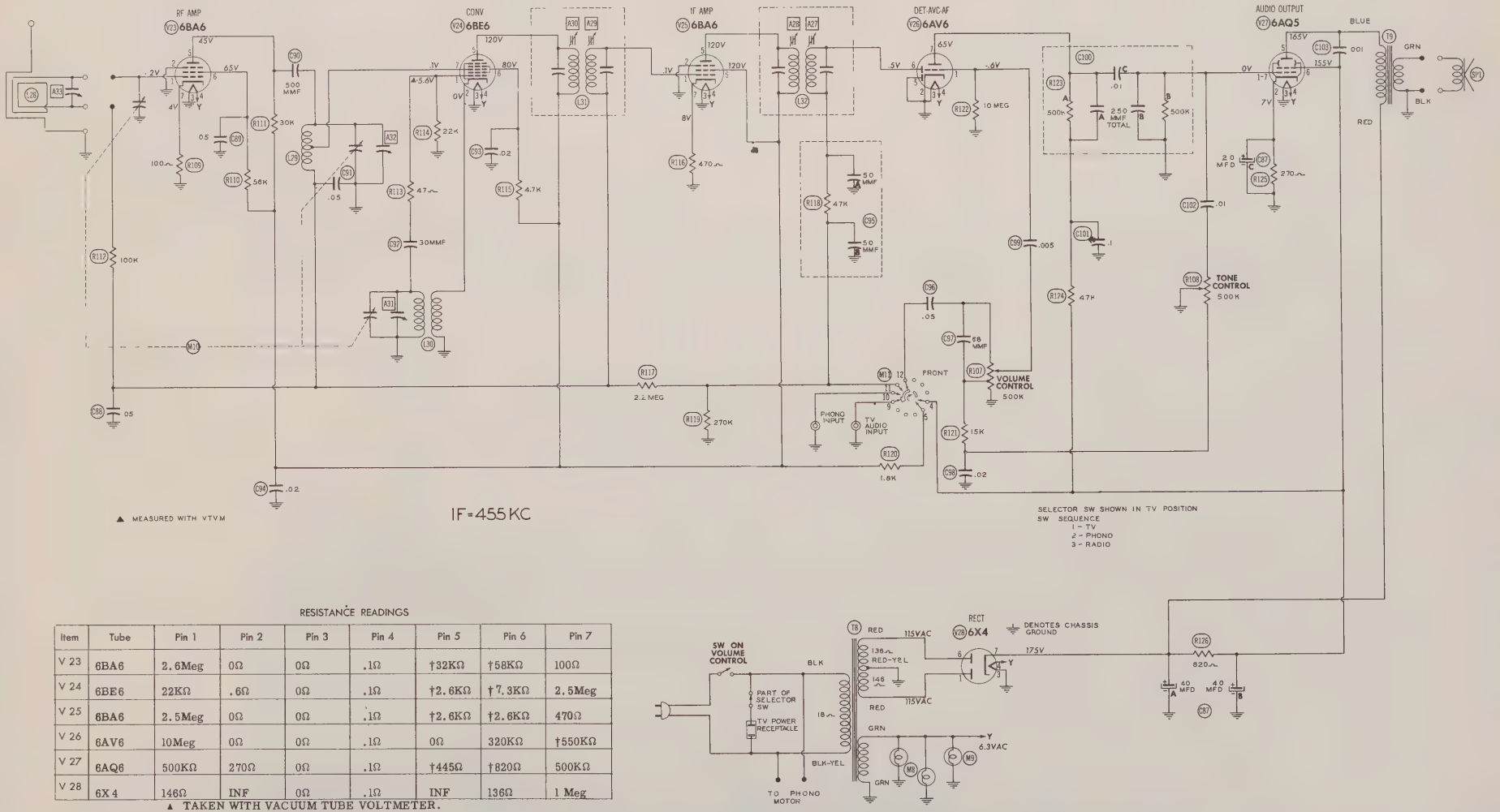
Check audio amplifier and output stages by switching to radio.

If Distorted	If Not Distorted
Check coupling capacitors bypass capacitors, tone compensating networks and other components associated with V26, V27 and V28 .	Check ratio detector alignment audio IF alignment and associated circuit components.

PROPERTY OF



TV CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 23	6BA6	2.6Meg	0Ω	0Ω	.1Ω	†32KΩ	†58KΩ	100Ω
V 24	6BE6	22KΩ	.6Ω	0Ω	.1Ω	†2.6KΩ	†7.3KΩ	2.5Meg
V 25	6BA6	2.5Meg	0Ω	0Ω	.1Ω	†2.6KΩ	†2.6KΩ	470Ω
V 26	6AV6	10Meg	0Ω	0Ω	.1Ω	0Ω	320KΩ	†550KΩ
V 27	6AQ6	500KΩ	270Ω	0Ω	.1Ω	†445Ω	†820Ω	500KΩ
V 28	6X4	146Ω	INF	0Ω	.1Ω	INF	136Ω	1 Meg

▲ TAKEN WITH VACUUM TUBE VOLTMETER.
† MEASURED FROM PIN 7 OF V28.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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TRUETONE
MODELS 2D1344A, B (Ch. 21MS36C)

RADIO SCHEMATIC

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1A	RF Amplifier	6BQ7	6BQ7	9AJ	
B	RF Amplifier	6BZ7	6BZ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-DC Restorer	6AL5	6AL5	6BT	
V7	Video Amplifier-Sync Phase Inv.	12AT7	12AT7	9A	
V8	Video Output	6AH6	6AH6	7BK	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	AGC Clamper	6AV6	6AV6	7BT	
V11	1st. Sound IF Amp.	6AU6	6AU6	7BK	
V12	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V13	Ratio Detector	6AL5	6AL5	6BT	
V14	Sync Separator	6BE6	6BE6	7CH	
V15A	Vert. Oscillator-Vert. Output	6SN7GTA	6SN7GTA	8BD	
B	Vert. Oscillator-Vert. Output	6BL7GT	6BL7GT	8BD	
V16	Horiz. AFC	6AL5	6AL5	6BT	
V17	Horiz. Mult.	6SN7GTA	6SN7GTA	8BD	
V18	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V19	Damper	6W4GT	6W4GT	4CG	
V20	HV Rectifier	1B3GT	1B3GT	3C	
V21	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA:	RTMA BASE TYPE	NOTES
V22	21MP4	21MP4		12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▰80	400	45X390	AFH3-46		CO37		FP378	RI341	
B	▲60	400								
C2A	▰80	400	45X391	AFH3-142		C109		FP375	TVL-3764	
B	▲100	50								
C3	60	450	45X386	AFH1-54		A050		FP237	TVL-2759	Note 1
C4	30	400	45X393	PRS450/30		BR3045A		TC77	TVA-1711	
C5A	■30	450	45X380	AFH3-137		CO97		FP366	TVL-3751	
B	▲40	50								Note 2
C6	5	25	45X378	PRS150/4		BR550		TC30	TVA-1203	
C7	4	100	45X361	PRS150/4		BR415		TC40	TVA-1402	
C8	5	25	45X378	PRS150/4		BR550		TC30	TVA-1203	
C9	3-9		31B-207		829-10					
C10	800		13D-153	CN-1-001	MFT-1000				503C-D1	
C11	3.6		CD8C3R6C							
C12	800		13D-196	CN-1-001	MFT-1000				503C-D1	
C13	1000		CD8X102Z	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C14	.5-3		31B-206		829-3			CT565A		
C15	47		CD8Q470K	BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C16	1.5		CD8C1R5M	SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C17	47		CD8Q470K	BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C18	.5-3		31B-206		829-3			CT565A		
C19	10		CD10C100K	SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C20	5		CD8U050C	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C21	1000		CD8X102Z	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C22	6.8		CD8C6R8C	SI6.8NP0	TCZ-6.8		NP0K-6R8	ZT-5568	5TCCB-V68	
C23	120		13D-055	SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C24	800		13D-153	CN-1-001	MFT-1000				503C-D1	
C25	800		13D-153	CN-1-001	MFT-1000				503C-D1	
C26	800		13D-153	CN-1-001	MFT-1000				503C-D1	
C27	.22	200	RCP10M2224M	P488-22		PTE4P22		PT4025	4TM-P22	
C28A	1000		80X3	BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C29	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C30	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C31	.22	200	RCP10M2224M	P488-22		PTE4P22		PT4025	4TM-P22	
C32A	1000		80X3	BPD-2X001	DD-2-102	TM5DD1	812-001	DCD-521	5HK-2D1	
B	1000									
C33	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C34	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C35	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C36	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C37	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C38	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C39	47		47X603	SI47	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C40	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C41	5		47X562	SI5NP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C42	360	500	47X568							
C43	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C44	.1	400	RCP10M4104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C45	.047	600	RCP10M6473M	P688-047	DF-503	PTE6S15		PT6147	6TM-S47	
C46	.015	600	RCP10M6153M	P688-015		PTE6S15		TP411	6TM-S15	
C47	.1	200	RCP10M2104M	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C48	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C49	1.5		47X584	SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C50	5000		47X507	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C51	100		47X604	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C52	5000		47X507	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C53	5000		47X507	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C54	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC 11	5HK-D1	
C55	470	500	47X525	1469-0005		SR5T5		MCB245	MS-35	
C56	.01	400	RCP10M4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C57	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C58	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C59A	.002		*7EX7	P688-002	*PC-100	(PTE6D2)	*41405-01	PT622	*10IC1	
B	.005			P688-005		(PTE6D5)		PT625		
C	.005			P688-005		(PTE6D5)		PT625		
C60	270	500	47X543	1464-005		PTE6D47			MS-25	
C61	.0047	400	RCP10M4472M	P688-0047				PT6247	6TM-D47	
C62	100		47X504	SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C63	.047	600	RCP10M6473M	P688-047		PTE6S47		PT6147	6TM-S47	
C64	.1	600	RCP10M6104M	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C65	.01	600	RCP10M6103M	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C66	.1	600	RCP10M6104M	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C67	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C68	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C69	270	500	RCM20A271K	1469-0003		SR5T3		MCB241	MS-33	
C70	.01	400	RCP10M4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C71	.0047	400	RCP10M4472M	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C72	.22	200	RCP10M2224M	P488-22		PTE4P22		PT4025	4TM-P22	
C73	.047	200	RCP10M2473M	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C74	4700	500	47X543	1464-005		DR5D5		MCB465	MS-25	
C75	430	500	RCM20B431K							
C76	.1	400	RCP10M4104	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C77	330	500	47X570	1469-00025						
C78	220	500	RCM20A221K	1469-00025		SR5T25		MCB240		
C79	.047	400	RCP10M4473M	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C80	1000		80X1	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C81	.1	400	RCP10M4104	P488-1		PTE4P1		PT401	4TM-P1	
C82	.047	400	RCP10M4473M	P488-047		PTE4S47		PT4147	4TM-S47	
C83	.15	400	RCP10M4154M	P488-15		PTE4P15		TP417	4TM-P15	
C84	56	2000	47X598			47X598				
C85	500	20000	47X560	HV20C	TV3-503	MMC-20TS	413-501		20DK-TS	
C86A	10000		76X8	BPD-2X01	DD-3-103	TM5D21	811-001	DC-511	5HK-Z21	
B	10000						811-001	DC-511		

Note 1. Some Models use 20MFD in this application.
Note 2. C5B not used.
* Items C59A, C59B, C59C, R70A, R70B, R70C are combined in one unit.

CONTROLS

ITEM No.	RATING RESIST-ANCE	RATING WATTS	AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω	½	40X387	Q17-109	AG-U-S	AB-8	U-6	Contrast
B	Shaft		Not Req.	C3	FS-5	AK-22	D6-36	Attach to R1A
R2A	50KΩ	½	40X381-C	Q11-123	AG-44-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	N4	RS-3/16	AK-4	D6-37	Attach to R2A
R3A	500KΩ	½	B40X333-A	Q11-133	AG-58-S	AB-59	U-50	Brightness
B	Shaft		Not Req.	N4	RS-3/16	AK-4	D6-37	Attach to R3A
R4A	1 Meg	½	B40X334-D	Q11-137	AG-61-S	AB-89	U-54	Vert. Hold
B	Shaft		Not Req.	N2	RS-3/16	AK-4	D6-37	Attach to R4A
R5A	150KΩ	½	B40X331-A	Q11-228	AG-52-S	AB-46	U-43	Horiz. Drive
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6	7.5Meg	½	40X363					Sync. Stability
R7A	4000Ω	½	40X388	Q11-114	AG-80-S	AB-9	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A
R8A	2.5Meg	½	B40X364	Q11-239	AG-84-S	AB-83	SU-585	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R8A
R9	2.7Meg							AGC Threshold-Note

Note. Not used in all models.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	AIRLINE PART No.	IRC PART No.	NOTES
R10	15KΩ	½	12A-004	BTS-15K	
R11	47KΩ	½	12A-039	BTS-47K	
R12	100KΩ	½	12A-094		
R13	180KΩ-5%	½	12A-187	BTS-180K-5%	
R14	150Ω	½	12A-163	BTS-150	
R15	100KΩ-5%	½	12A-166	BTS-100K-5%	
R16	10KΩ	½	12A-040	BTS-10K	
R17	220KΩ	½	12A-041		
R18	10KΩ	½	12A-040	BTS-10K	
R19	10KΩ	½	12A-040	BTS-10K	
R20	1000Ω	½	B85102	BTS-1000	
R21	8200Ω	½	B85822		
R22	47Ω	½	B83470	BTS-47	
R23	1000Ω	½	B85102	BTS-1000	
R24	150Ω	½	B85151	BTS-150	
R25	22KΩ	½	B83223		
R26	47Ω	½	B83470	BTS-47	
R27	1000Ω	½	B85102	BTS-1000	
R28	150Ω	½	B85151	BTS-150	
R29	3.9Meg	½	B83395	BTS-3.9Meg	Note 1
R30	22KΩ	½	B83223		
R31	180Ω	½	B84181	BTS-180	
R32	1500Ω	½	B84152	BTS-1500	
R33	100K	½	B84104	BTS-100K	
R34	330KΩ-5%	½	B83334	BTS-330K-5%	
R35	4700Ω-5%	½	B83472	BTS-4700-5%	
R36	560Ω	1	C84562	BTA-5600	
R37	1500Ω	½	B84152	BTS-1500	
R38	33KΩ	½	B84333	BTS-33K	
R39	1 Meg	½	B84105	BTS-1 Meg	
R40	100Ω	½	B84101	BTS-100	
R41	4700Ω-5%	1	C83472	BTA-4700-5%	
R42	100KΩ	½	B85104	BTS-100K	
R43	1 Meg	½	B84105	BTS-1 Meg	
R44	22KΩ	½	B84223	BTS-22K	
R45	100KΩ	½	B85104	BTS-100K	
R46	2200Ω	½	B83222	BTS-2200	
R47	47KΩ	½	B85473	BTS-47K	
R48	47KΩ	½	B85473	BTS-47K	
R49	470KΩ	½	B84474	BTS-470K	
R50	100Ω	½	B84101	BTS-100	
R51	1000Ω	½	B85102	BTS-1000	
R52	56KΩ	½	B84563		
R53	100KΩ	½	B84104	BTS-100K	
R54	1000Ω	½	B85102	BTS-1000	
R55	33KΩ	½	B84333	BTS-33K	
R56	270Ω	½	B84271	BTS-270	
R57	68KΩ	½	B84683	BTS-68K	
R58	22KΩ	½	B84233	BTS-22K	
R59	22KΩ	½	B84233	BTS-22K	
R60	47KΩ	½	B84473	BTS-47K	
R61	10KΩ-5%	½	B84103	BTS-10K-5%	
R62	270KΩ	½	B84274	BTS-270K	
R63	1.5Meg	½	B84155	BTS-1.5Meg	
R64	68KΩ	½	B84683	BTS-68K	
R65	820KΩ	½	B84824	BTS-820K	
R66	2200Ω-5%	½	B83222	BTS-2200-5%	
R67	3300Ω	½	B84322	BTS-3300	
R68	2200Ω-5%	½	B83222	BTS-2200-5%	
R69	1000Ω	1	C84102	BTA-1000	
R70A	22KΩ		*76X7	BTS-22K	
B	8200Ω			BTS-8200	
C	8200Ω			BTS-8200	
R71	470KΩ	½	B85474	BTS-470K	
R72	1.8Meg	½	B84185	BTS-1.8Meg	Note 5
R73	1.2Meg	½	B84125	BTS-1.2Meg	
R74	10KΩ	½	B84103	BTS-10K	
R75	180KΩ	½	B84184	BTS-180K	
R76	2.2Meg	½	B84225	BTS-2.2Meg	
R77	2.2Meg	½	B84225	BTS-2.2Meg	Note 3
R78	820Ω	½	B84321	BTS-820	Note 4
R79	6800Ω	2	D84682	BTS-6800	Note 2
R80	560Ω	½	B84561	BTS-560	
R81	560Ω	½	B84561	BTS 560	
R82	1000Ω	½	B85102	BTS-1000	

RESISTORS (CONT.)

ITEM No.	RATING OHMS	RATING WATT	AIRLINE PART No.	IRC PART No.	NOTES
R83	27KΩ	½	B84273	BTS-27K	
R84	6800Ω	½	B84682	BTS-6800	
R85	6800Ω	½	B84682	BTS-6800	
R86	100KΩ	½	B84104	BTS-100K	
R87	100KΩ	½	B84104	BTS-100K	
R88	4.7Meg	½	B85475	BTS-4.7Meg	
R89	470KΩ	½	B85474	BTS-470K	
R90	33KΩ	½	B84333	BTS-33K	
R91	2200Ω	½	B83222	BTS-2200	
R92	5600Ω	1	C83562	BTA-5600	
R93	150KΩ-5%	½	B83154	BTS-150K-5%	
R94	220KΩ-5%	½	B83224	BTS-220K-5%	
R95	47KΩ	½	B84473	BTS-47K	

Note 1. Model No. 2D1344A uses a 2.5Meg resistor in this application.
Note 2. Model No. 2D1344A uses a 3300Ω resistor in this application.
Note 3. Model No. 2D1344A uses a 1 Meg resistor in this application.
Note 4. Model No. 2D1344A uses a 1500Ω resistor in this application.
Note 5. Some models may use a 1.5Meg resistor in this application.
Note 6. Not used in all models.
* Items R70A, R70B, R70C, C59A, C59B, C59C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC ② 1A	620VCT	5VAC	6.3VAC ② 1.2A SEC. 4 6.3VAC ② 7.5A	53X324	P-8185 ①				

① Tape up lower high voltage tap.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING SEC.	AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	190Ω	1100Ω	54X8	A-8125	A-3003	TSO-5	A-97X	208T2⑧	Vert. Osc. Trans.
T3	469Ω tap ⑤ .5Ω, 7Ω, 14Ω, 23Ω, 39Ω	3.5Ω SEC. 2 0Ω	53X330						Horiz. Output Trans.
T4	1500Ω tap ⑥ 4.4Ω		51X156	A-8123 ①	A-3037 ①	TSO-8 ① ③	A-102X ①	222T1 ①	Vert. Output Trans.
T5A	23Ω		8A2274	DY-9A ④	MDF-70 ③	TY-3 ⑦	Y-17	211D2	Horiz. Deflection Coils
B	47Ω						WC-12 ③	213R1	Vert. Deflection Coils
T6	15Ω		9A2262					201R4 ⑧	Horiz. Linearity Coil
T7	.8Ω		9A2183	WC- 4 ⑧	MWC-2 ⑤ ⑧	TW-2 ⑧			Width Coil

① Drill one new mounting hole.
② Connect as auto trans.
③ Use original horiz. deflection coil network if necessary.
④ Connect to coded blue and red terminals.
⑤ Enlarge mounting hole.
⑥ Bend clip (thread section) or use slider and core
⑦ Use original deflection coil network
⑧ Mount on top of chassis.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L1	.230ADC	51Ω	1.98 Hy.	52X90	C-2326	C-2991	TR-1733 ①	C-17X

① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	AIRLINE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L2A	Ant. Coil	0Ω CT	0Ω	9A2278-1				Channel 2
B	Ant. Coil	0Ω CT	0Ω	9A2278-2				Channel 3
C	Ant. Coil	0Ω CT	0Ω	9A2278-3				Channel 4
D	Ant. Coil	0Ω CT	0Ω	9A2278-4				Channel 5
E	Ant. Coil	0Ω CT	0Ω	9A2278-5				Channel 6
F	Ant. Coil	0Ω CT	0Ω	9A2278-6				Channel 7
G	Ant. Coil	0Ω CT	0Ω	9A2278-7				Channel 8
H	Ant. Coil	0Ω CT	0Ω	9A2278-8				Channel 9
I	Ant. Coil	0Ω CT	0Ω	9A2278-9				Channel 10
J	Ant. Coil	0Ω CT	0Ω	9A2278-10				Channel 11
K	Ant. Coil	0Ω CT	0Ω	9A2278-11				Channel 12
L	Ant. Coil	0Ω CT	0Ω	9A2278-12				Channel 13
L3	Fil. Choke	0Ω		34A-546				
L4	Neutr. Coil	0Ω		31B-296				
L5A	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-1				Channel 2
B	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-2				Channel 3
C	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-3				Channel 4
D	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-4				Channel 5
E	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-5				Channel 6
F	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-6				Channel 7
G	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-7				Channel 8
H	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-8				Channel 9
I	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-9				Channel 10
J	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-10				Channel 11
K	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-11				Channel 12
L	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-12				Channel 13
L6	Fil. Choke	0Ω		34A575				
L7	RF Choke	0Ω		31B-295				
L8	1st. Video IF	1Ω		31A-078				
L9	RF Choke	1.2Ω		31B-239				
L10	7th. Choke	0Ω		9A2033		19-3001	TV-189	4602	1 Microhenry
L11	2nd. Video IF	.2Ω	.2Ω	9A2230		17-1063			
L12	Fil. Choke	0Ω		9A2033		19-3001	TV-189	4602	1 Microhenry
L13	3rd. Video IF	.2Ω	.2Ω	9A2230		17-1064			
L14	Fil. Choke	0Ω		9A2033		19-3001	TV-189	4602	1 Microhenry
L15	RF Choke	2.6Ω		9A1979		19-3036	TV-180	6616	36 Microhenries
L16	4th. Video IF	.2Ω		9A2226			TV-101	6187	Buckles trap
L17	Series Peaking Coil	11.5Ω		36A10		19-4060	TV-180 †	6172 †	60 Microhenries, wound on 22KΩ resistor
L18	Shunt Peaking Coil	26Ω		36A11		19-3500	TV-188	6174	500 Microhenries
L19	4.5MC Trap	.3Ω		9A2074		30-1004††	TV-151	4170	
L20	Series Peaking Coil	2.8Ω		9A1979		19-3036	TV-180	6176	36 Microhenries
L21	Shunt Peaking Coil	9Ω		36A16		19-3075 *	TV-181 *	6172 *	80 Microhenries, wound on 1.5KΩ resistor
L22	Series Peaking Coil	13Ω		36A12		19-4180	TV-184 †	4644 †	160 Microhenries, wound on 22KΩ resistor
L23	Shunt Peaking Coil	14Ω		36A2		19-3180	TV-184	6180	190 Microhenries
L24	1st. Sound IF	3Ω		9A2168		17-1031 †	TV-122 ▲	1470A **	
L25	2nd. Sound IF	1.6Ω	1.6Ω	9A2170			TV-123	6203	
L26	Ratio Det.	3.6Ω	.6Ω CT	9A2269		17-1033	TV-110	1468	Tertiary Winding ~1Ω
L27	Horiz. Osc.	55Ω		9A2096		19-1576	TV-163	6210	

* Parallel with 1.5KΩ resistor
† Parallel with 22KΩ resistor
†† Drill mounting holes.
▲ Deform unused section
** Add 47 MMF capacitor externally.
†† Remove original coil with 360MMF capacitor and use Meissner replacement with 47MMF capacitor.

COILS (CONT.)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	AIRLINE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
E	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-5				Channel 6
F	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-6				Channel 7
G	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-7				Channel 8
H	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-8				Channel 9
I	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-9				Channel 10
J	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-10				Channel 11
K	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-11				Channel 12
L	R.F. Mixer Grid & Osc. Coil	0Ω		9A2279-12				Channel 13
L6	Fil. Choke	0Ω		34A575				
L7	RF Choke	0Ω		31B-295				
L8	1st. Video IF	1Ω		31A-078				
L9	RF Choke	1.2Ω		31B-239				
L10	7th. Choke	0Ω		9A2033		19-3001	TV-189	4602	1 Microhenry
L11	2nd. Video IF	.2Ω	.2Ω	9A2230		17-1063			
L12	Fil. Choke	0Ω		9A2033		19-3001	TV-189	4602	1 Microhenry
L13	3rd. Video IF	.2Ω	.2Ω	9A2230		17-1064			
L14	Fil. Choke	0Ω		9A2033		19-3001	TV-189	4602	1 Microhenry
L15	RF Choke	2.6Ω		9A1979		19-3036	TV-180	6616	36 Microhenries
L16	4th. Video IF	.2Ω		9A2226			TV-101	6187	Buckles trap
L17	Series Peaking Coil	11.5Ω		36A10		19-4060	TV-180 †	6172 †	60 Microhenries, wound on 22KΩ resistor
L18	Shunt Peaking Coil	26Ω		36A11		19-3500	TV-188	6174	500 Microhenries
L19	4.5MC Trap	.3Ω		9A2074		30-1004††	TV-151	4170	
L20	Series Peaking Coil	2.8Ω		9A1979		19-3036	TV-180	6176	36 Microhenries
L21	Shunt Peaking Coil	9Ω		36A16		19-3075 *	TV-181 *	6172 *	80 Microhenries, wound on 1.5KΩ resistor
L22	Series Peaking Coil	13Ω		36A12		19-4180	TV-184 †	4644 †	160 Microhenries, wound on 22KΩ resistor
L23	Shunt Peaking Coil	14Ω		36A2		19-3180	TV-184	6180	190 Microhenries
L24	1st. Sound IF	3Ω		9A2168		17-1031 †	TV-122 ▲	1470A **	
L25	2nd. Sound IF	1.6Ω	1.6Ω	9A2170			TV-123	6203	
L26	Ratio Det.	3.6Ω	.6Ω CT	9A2269		17-1033	TV-110	1468	Tertiary Winding ~1Ω
L27	Horiz. Osc.	55Ω		9A2096		19-1576	TV-163	6210	

* Parallel with 1.5KΩ resistor
† Parallel with 22KΩ resistor
†† Drill mounting holes.
▲ Deform unused section
** Add 47 MMF capacitor externally.
†† Remove original coil with 360MMF capacitor and use Meissner replacement with 47MMF capacitor.

FUSES

ITEM No.	TYPE	RATING	AIRLINE PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG Slo-Blo	4/10A ② 125 V	16X147-3	16X146	313.400 (3AG-4/10A-Slo-Blo)	357001	MDL-4/10	4405

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M2	Pilot Lamp	7A33	Type #51
M3	RF Tuner	25A1095	
M4	Centering Magnet	2A426	
M5	Ion Trap	2A407	
	Cabinet	25S	
	Back Assembly	S-14X67	
	Escutcheon	S-4X30	Control Panel,
	Safety Glass	17X174	
	Mask	4X1000	
	Knob	10A820-1	Fine Tuning, Both Models,
	Knob	10A821-2	Contrast,
	Knob	10A813-3	Contrast,
	Knob	10A812	Channel Selector,

AIRLINE MODELS
25WG-3060A, 25WG-3070A

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V23	RF Amplifier	6BA6	6BA6	7BK	
V24	Converter	6BE6	6BE6	7CH	
V25	IF Amplifier	6BA6	6BA6	7BK	
V26	Det.-AVC-AF Amp	6AV6	6AV6	7BT	
V27	Audio Output	6AQ5	6AQ5	7BZ	
V28	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C87A	■40	200		AFH2-29		B024		FP221	TVL-2460	
B	▲40	150	45X381	PRS25/25		BR202A		TC26	TVA-1205	
C	20	25								
C88	.05	200	B66503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C89	.05	200	B66503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C90	500		47X508	SI500	D6-501	TM5T5	GP2K-501	UC-535	5GA-T5	
C91	.05	200	B66503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C92	30		47X558		TCN-30		N750K-300			
C93	.02	200	B66203	P488-02	DD-203	PJ2S 2		PT412	2TM-S2	
C94	.02	200	B66203	P488-02	DD-203	PJ2S 2		PT412	2TM-S2	
C95A	50		*76X1	SI50	*PC-52	TM5Q5	*1403-03	UC-545	*100C3	
B	50			SI50		TM5Q5		UC-545		
C96	.05	200	B66503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C97	68	500	47X471	SI68	D6-680	5W5Q7	GP1K-680	UC-5468	5GA-Q68	
C98	.02	200	B66203	P488-02	DD-203	PJ2S2		PT412	2TM-S2	
C99	.005	400	D66502	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C100A	250									
B			†76X5		†PC-80		†1404-01		†102C1	
C	.01									
C101	.1	200	B66104	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C102	.01	200	B66103	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C103	.001	600	F66102	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	

* Items C95A, C95B, R118 are combined in one unit.
† Items C100A, C100B, C100C, R123A, R123B are combined in one unit.
When replacing items separately C100A and C100B should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R107A	500KΩ	½	36X372B	Q13-133X	AT-78	BTSK-66-S	UT-427	Volume Tap ⓐ 100KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R107A
C	Switch		Not Req.	76-1	SW-A	Not Req.	US-26	Attach to R107A
R108A	500KΩ	½	40X310	Q13-133	AG-60-Z	BSK-60	U-48	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R108A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R109	100Ω	½	B84101	BTS-100	
R110	56KΩ	½	B84563	BTS-56K	
R111	30KΩ	½	B84303		
R112	100KΩ	½	B85104	BTS-100K	
R113	47Ω	½	B85470	BTS-47	
R114	22KΩ	½	B85223	BTS-22K	
R115	4700Ω	½	B84473	BTS-4700	
R116	470Ω	½	B84471	BTS-470	
R117	2.2Meg	½	B85225	BTS-2.2Meg	
R118	47KΩ	½	*76X1	BTS-47K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R119	270KΩ	½	B84274	BTS-270K	
R120	1800Ω	1	C85182	BTA-1800	
R121	15KΩ	½	B84153	BTS-15K	
R122	10Meg	½	B85106	BTS-10Meg	
R123A	500KΩ	½	† 76X5		
B	500KΩ	½			
R124	47KΩ	½	B85473	BTS-47K	
R125	270Ω	½	B84271	BTS-270	
R126	820Ω	2	D84821	BTB-820	

* Items R118, C95A, C95B, are combined in one unit.
† Items R123A, R123B, C100A, C100B, C100C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T8	117VAC ⓐ .27A	330VCT .044ADC	6.3VAC ⓐ 2.64A		53X291G					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T9	7KΩ	3.7Ω	444Ω	.78Ω	51X134	A-3878①	A-3020	RO-13 ①	S-7X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	8"	PM	3.7Ω	C-12A477	ST-115 Mod. P8-V	8A31	

RADIO PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L28	Loop Ant.	.1Ω	1.4Ω	9A2114				
L29	RF Coil	9Ω		9A2283				Tapped @ 3.2Ω
L30	Osc. Coil	.6Ω	7.3Ω	9A2113	14-1073		71-Osc.	
L31	Input IF	12Ω	12.5Ω	9A2112	16-6758	BC-352	12-C1	
L32	Output IF	12Ω	14Ω	9A2063	16-6758	BC-353	12-C2	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	TRUETONE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M6	10L3-J	10L3-J	A-78-J A-33-J			96-S	S-1 S-3	

ASTATIC, AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

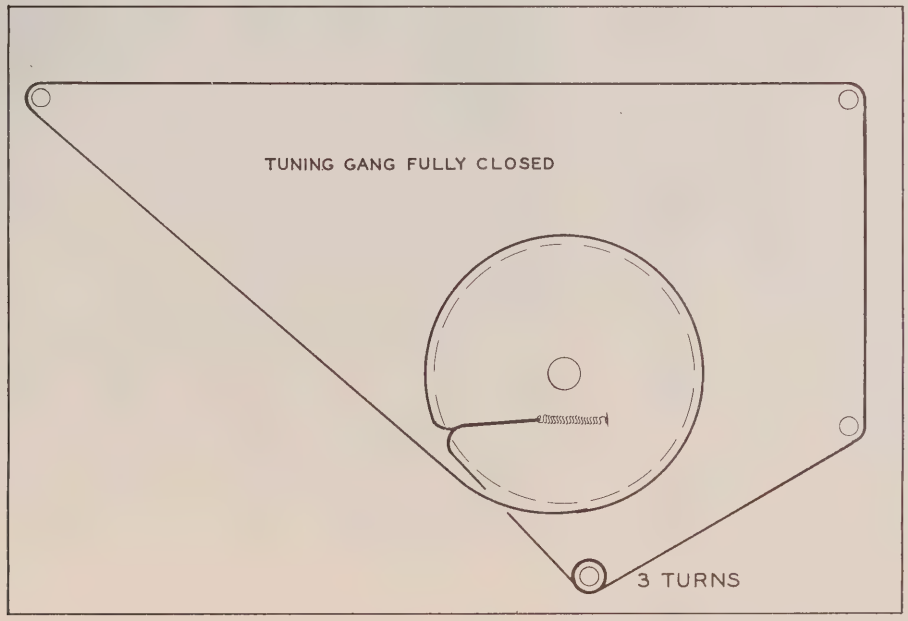
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	TRUETONE PART No.	WALCO PART No.	JENSEN PART No.	
M7	A1—J	W-5MGA or W-5MGS	A-75LP or A-85LP	1 Mil
	A3—J	W-5A or W-5S	A-75 or A-85	3 Mil

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M8	Pilot Bulb	7A103	Type #47 (2 Used)
M9	Pilot Bulb	7A32	Type #51 (Jewel Light)
M10	Tuning Capacitor	14A213	24-472MMF, 14-240MMF, 13-115MMF
M11	Switch	2A403	Function Selector
A33	Trimmer Capacitor	17A235	Antenna Loop, 2-24MMF
	Escutcheon	4X1162	
	Glass (Dial)	58X764	
	Pointer	15X251	
	Knob	10A759	Off/On Volume, Tuning, Tone & Function Selector (4 Used)



DIAL CORD DRIVE

TROUBLE SHOOTING AIDS (CONT.)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Substitute V17, V18, V19 and V20. Check waveform at W17.

If Satisfactory	If Unsatisfactory
Check R100, R101, C85, C81, C82, T3, C79, C80 and other associated components.	Check C76, C77, C78 and other components associated with V17.

INSUFFICIENT HIGH VOLTAGE

Substitute V17, V18, V19, V20 and V21. Proceed as outlined under "LOSS OF HIGH VOLTAGE".

BLOOMING

Subsitute V18, V19, V20 and V21. Check R100, R101, C85, T3 and other associated components.

POWER

SMALL AND/OR DIM RASTER

Substitute V21. Measure B+.

If Low	If Satisfactory
Check B+ filter capacitors, choke and filter resistors. Check outputs for shorts.	Proceed as outlined under "INSUFFICIENT HIGH VOLTAGE."

DIM PICTURE, WEAK SOUND

Substitute V21. Check B+ filter capacitors and decoupling networks.

GENERAL

RASTER, NO SOUND, NO PICTURE

Substitute V1, V2, V3, V4, V5, V6 and V 7. Check video IF and tuner coupling network and components.

SNOWY PICTURE WEAK SOUND

Substitute V1, V2, V3, V4 and V5. Check associated components. (This condition will be condition will be more noticeable in weak signal areas).

RASTER, SOUND, NO PICTURE

See LOSS OF VIDEO.

INTERMITTANT STREAKS

Check high voltage section for corona discharge and arcing.

TOTAL LOSS OF SYNC

Substitute V7 and V14. Check C56 and other associated components.

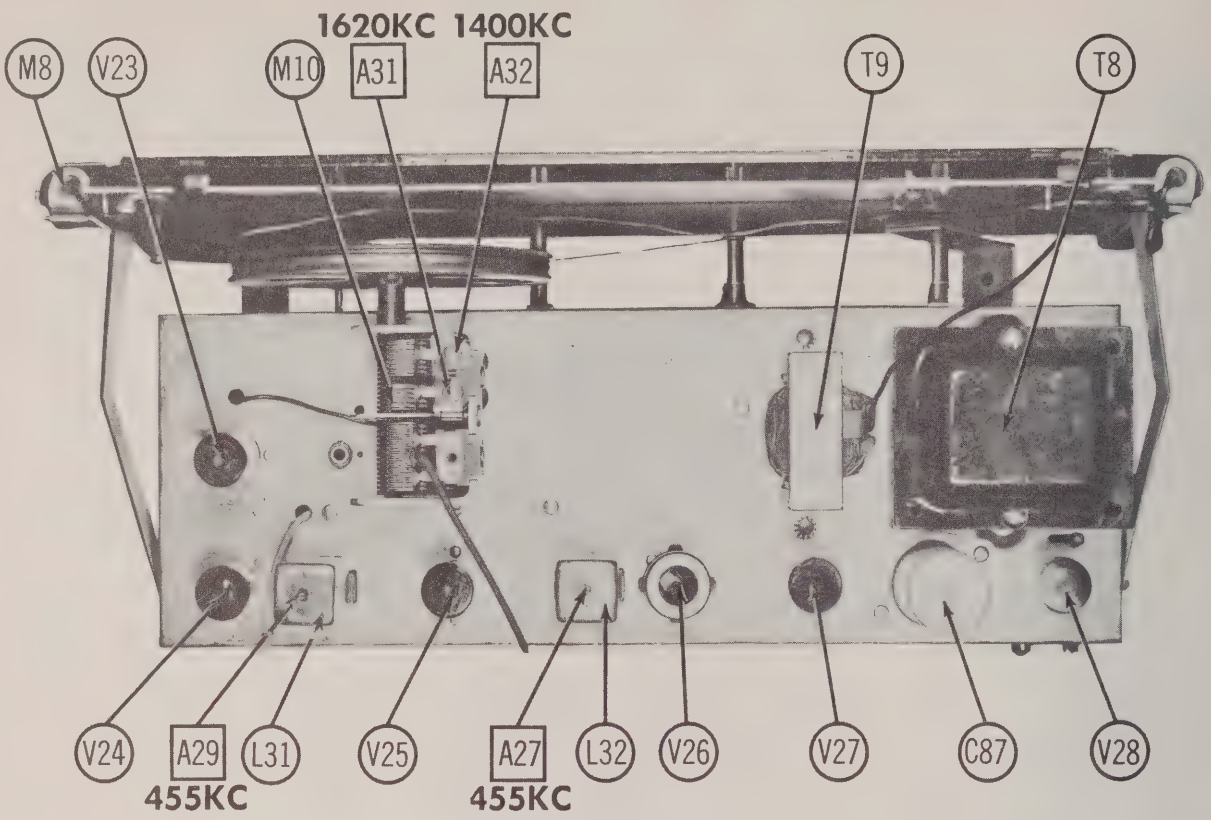
POOR FOCUS

Substitute V21. Check B+ applied to focus anode of picture tube. If satisfactory, check picture tube.

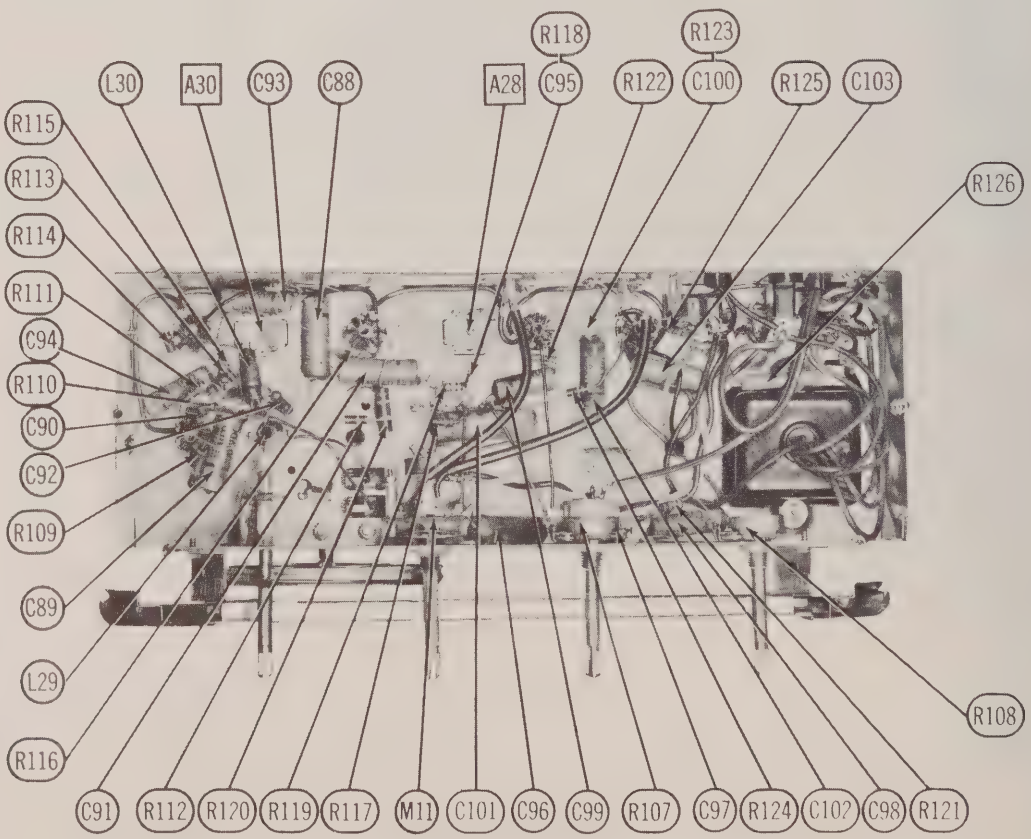
SET DEAD

Check fuse M1. Check AC interlock assembly. Check T1.

Symptoms shown above are assumed and are not indicative of the quality and workmanship of this receiving equipment.



RADIO CHASSIS-TOP VIEW



RADIO CHASSIS-BOTTOM VIEW

SERVICING IN THE FIELD

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3024 MEADE ST

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

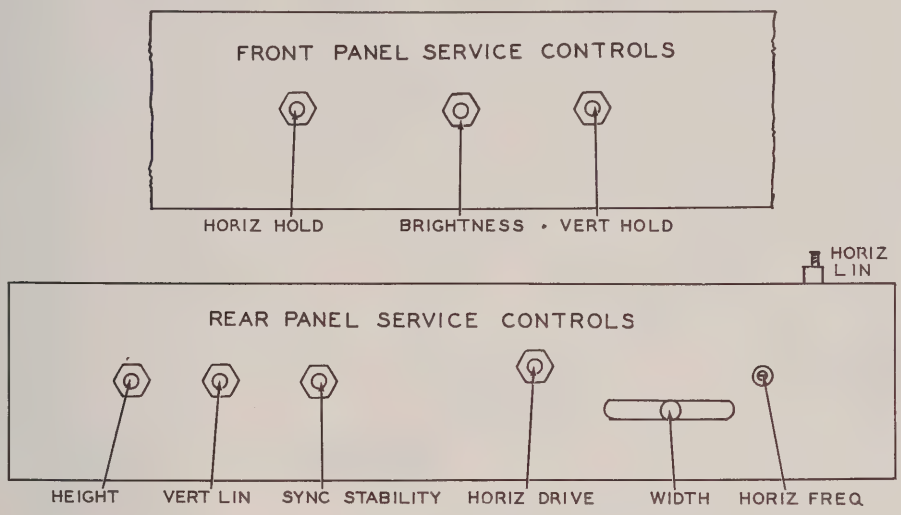
PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 wood screws at top of safety glass. Hold safety glass and remove wood strip. Lift out safety glass. (Use extreme caution when removing safety glass.)

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS - Sync Stability

Adjust for most stable sync on majority of channels received.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug (L27) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF detector buzz, adjust the ratio detector secondary (L26) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for LV Power Supply protection (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting a magnetic ring around the neck of the picture tube located flush against the yoke. Turn the disk-like knob and at the same time rotate the ring around the tube until picture is properly centered.

DISASSEMBLY INSTRUCTIONS

TV DISASSEMBLY

1. Remove 4 push on type control knobs from front panel.
2. Remove 2 wood and 2 metal screws. Remove rear cover.
3. Disconnect built-in antenna. Remove 2 wood screws. Remove antenna bracket.
4. Disconnect TV audio cable, TV AC line, phono audio cable, phono AC lines, and speaker lines.
5. Remove Jewel light.
6. Remove 5 chassis bolts. Remove chassis.

RADIO DISASSEMBLY

1. Remove 4 push on type control knobs from front panel.
2. Disconnect AM loop antenna leads.
3. Remove 3 chassis bolts. Remove chassis.
4. Remove 4 speaker nuts. Remove speaker.

PHOTOFACT* Folder

*TRADE MARK

CAPEHART
MODEL 12F272M (Ch. CT-74)

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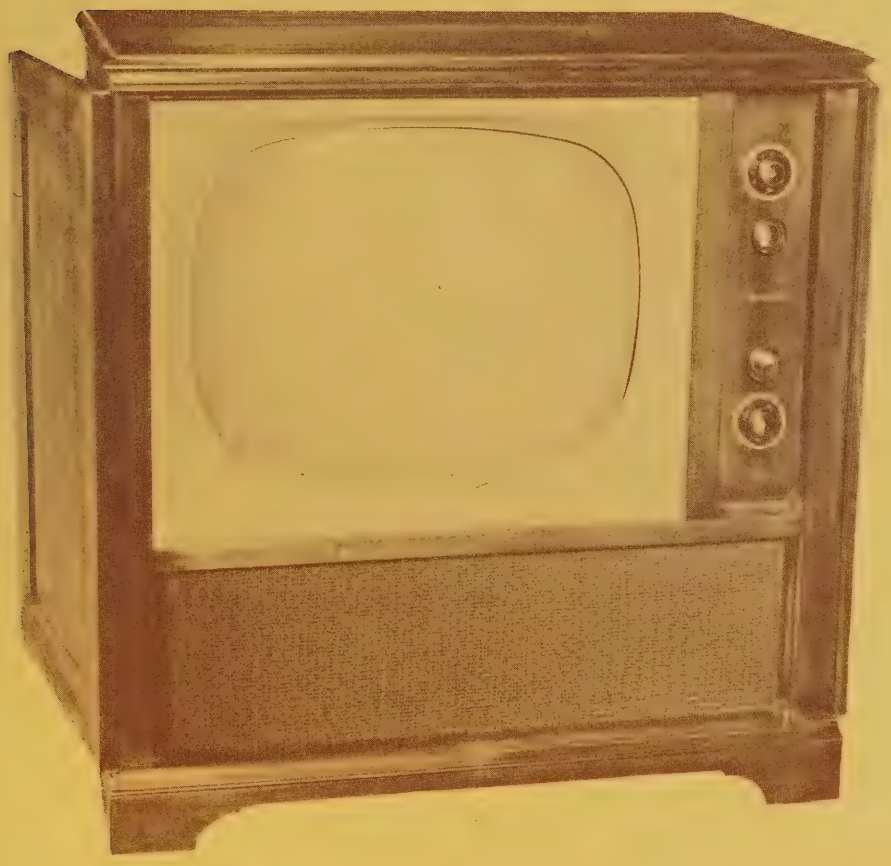

MODEL 12F272M

CAPEHART
MODEL 12F272M (Ch. CT-74)

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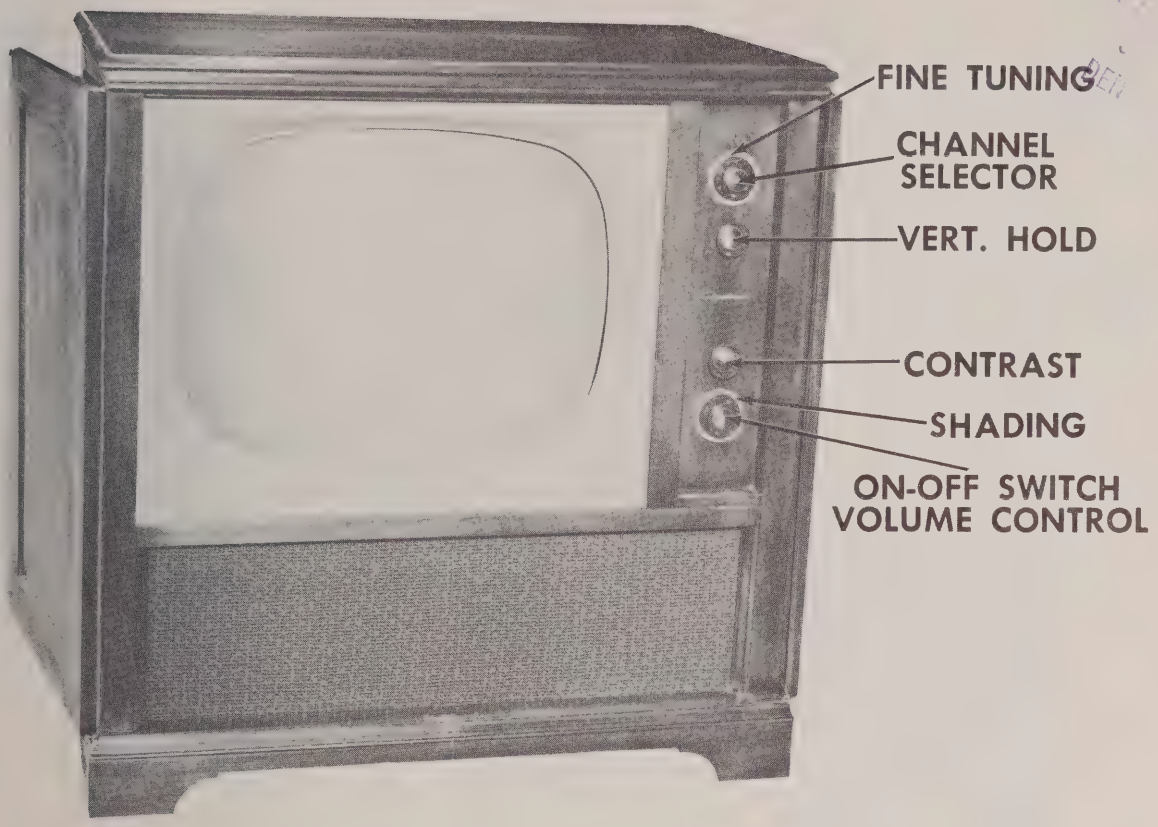
CAPEHART
MODEL 12F272M (Ch. CT-74)



CAPEHART
MODEL 12F272M (Ch. CT-74)

TRADE NAME	Capehart Model 12F272M (Ch. CT-74)
MANUFACTURER	Capehart-Farnsworth Corp., Fort Wayne 1, Indiana
TYPE SET	Television Receiver
TUBES	Twenty-seven
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 2.84 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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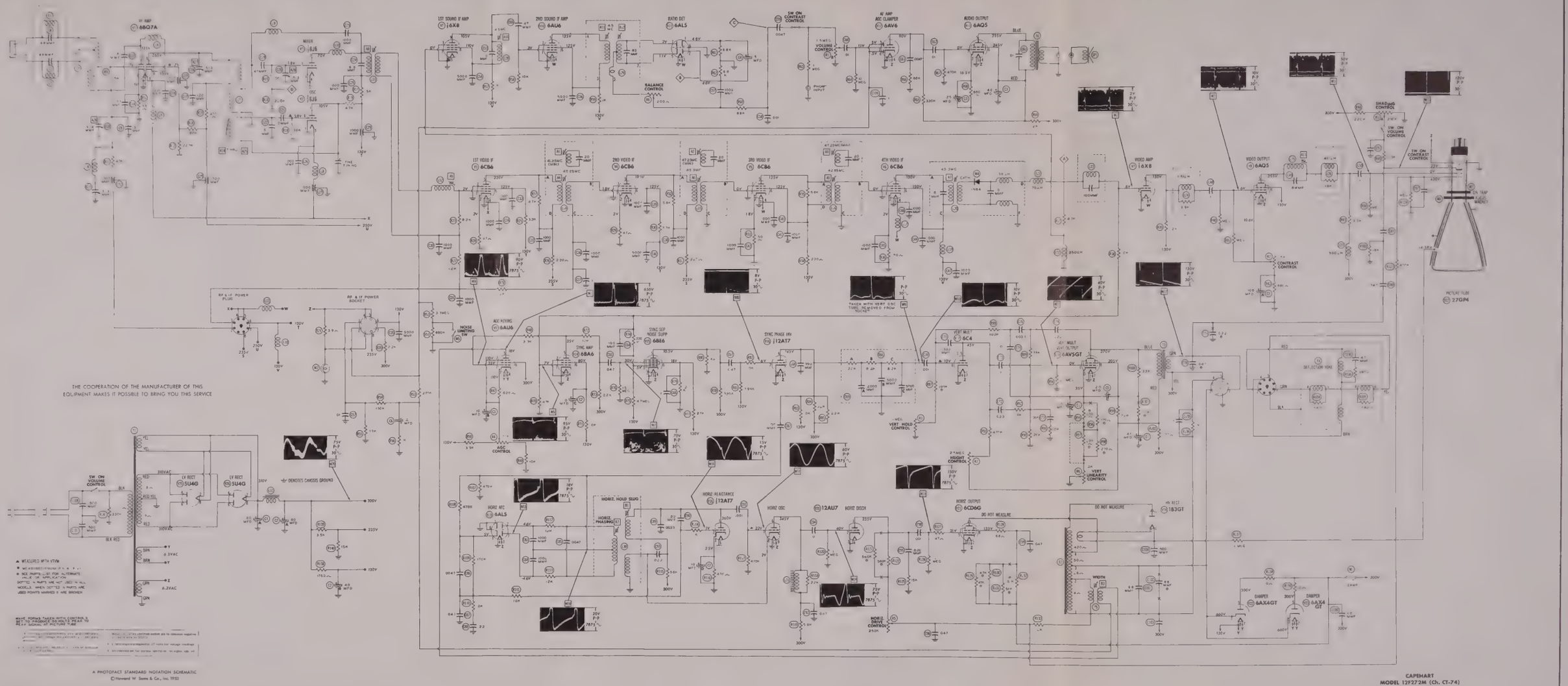
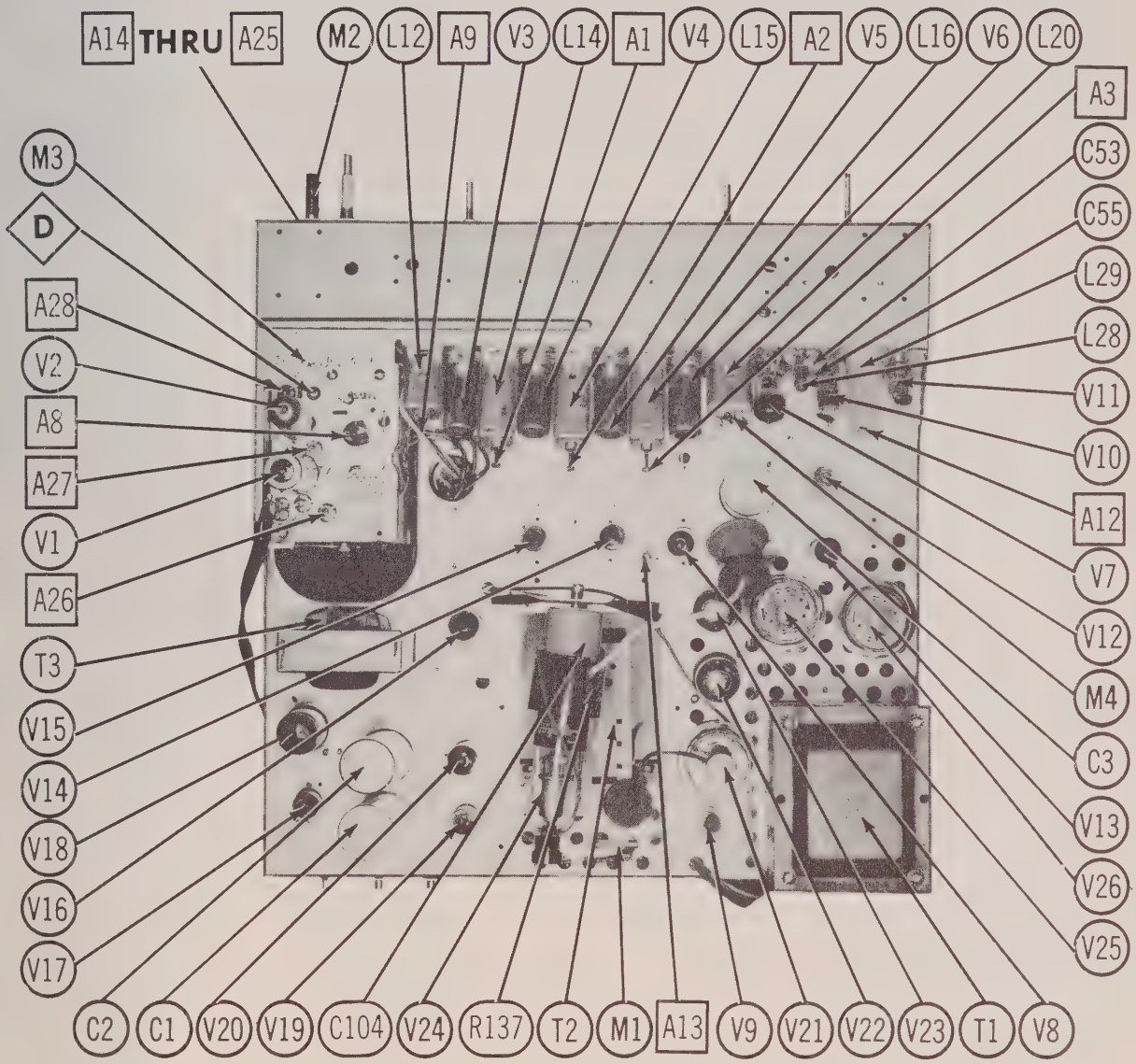
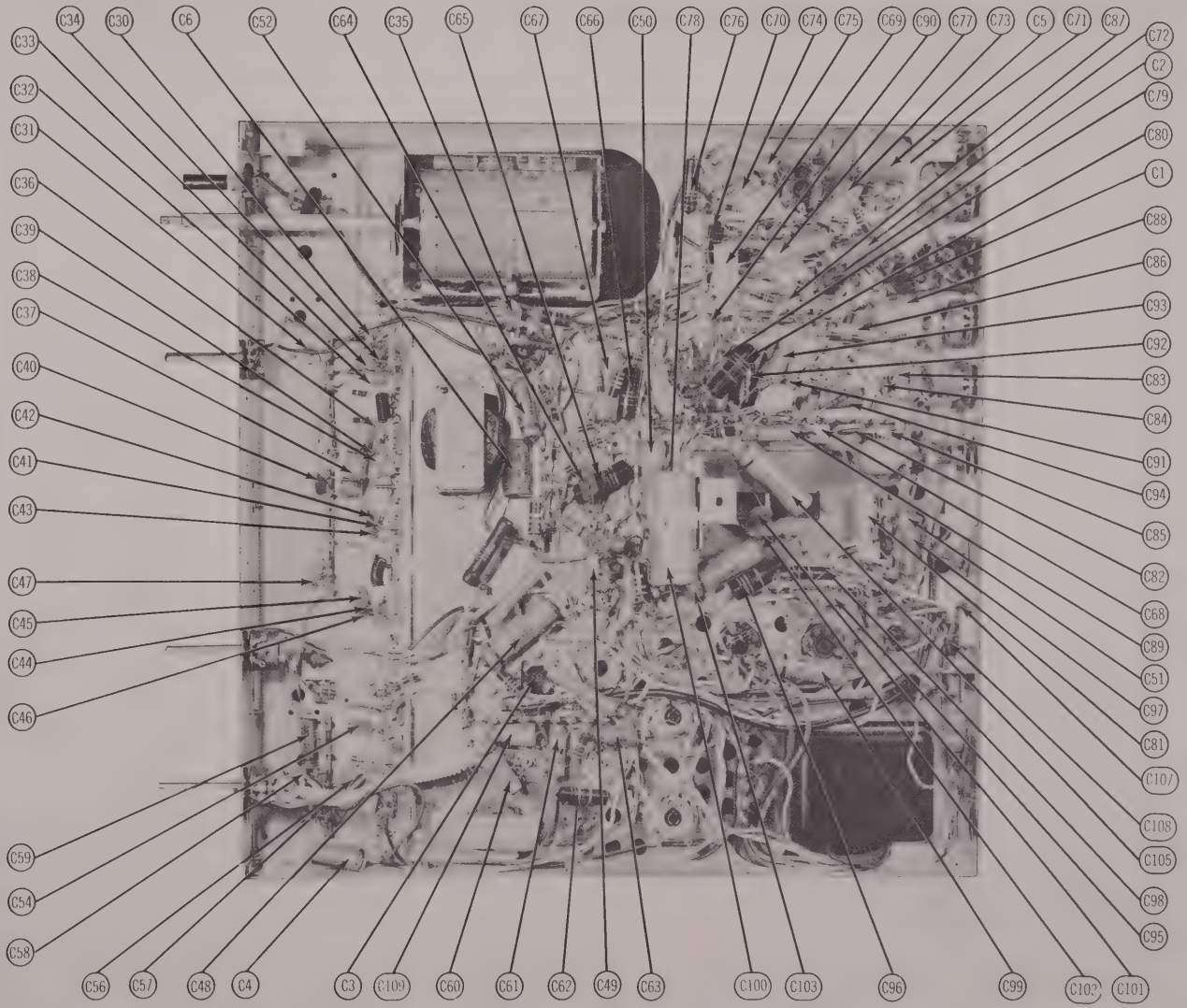


CAPEHART
MODEL 12F272M (Ch. CT-74)

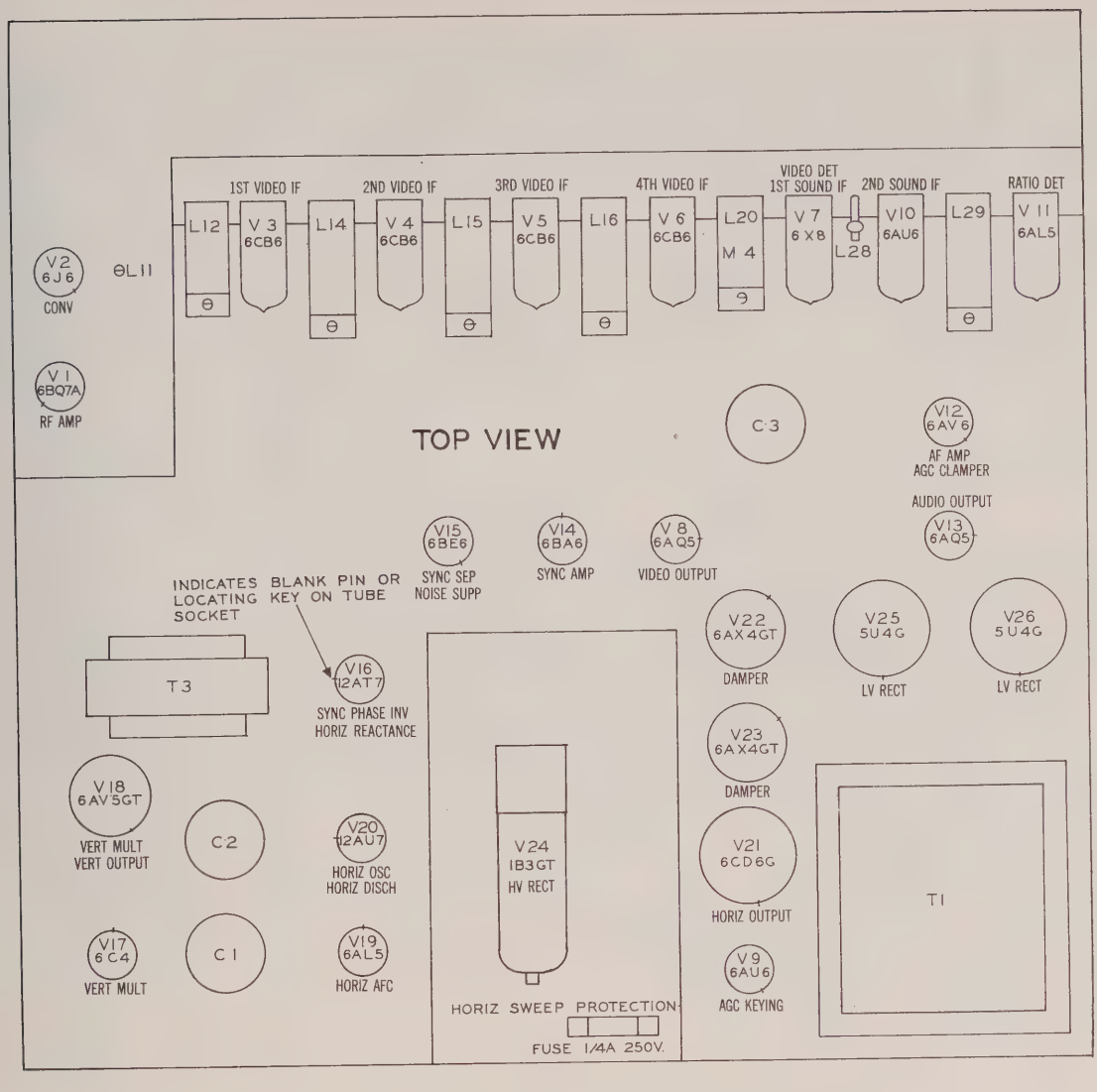


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V25, V26

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V7, V8, V27
Has pic, no sound - V7, V10, V11, V12, V13
Overloaded picture - V9

SYNC FAILURE
No vert. sync - V16, V17
No horiz. sync - V16, V19, V20
No vert. or horiz. sync - V14, V15, V16

SWEEP FAILURE
No raster, has sound - V20, V21, V22, V23, V24, V27 Fuse (M1)
No vertical deflection - V17, V18
Poor vert. linearity or foldover - V17, V18
Poor horiz. linearity or foldover - V20, V21, V22, V23
Narrow picture - V20, V21, V22, V23, V24, V25, V26
Vert. off freq. - V16, V17
Horiz. off freq. - V16, V19, V20

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications. Connect the negative lead of a 3 volt battery to pin 3 of the IF power socket. Connect the positive lead to chassis.
Remove the AGC keying tube (V9) from its socket.
To adjust A7 in step 4 remove the contrast control from the front panel. The adjustment can be made through this hole, using a thin blade alignment tool.
In step 5 connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	Not used	41.25MC	Any	Use VTVM. DC probe to point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	"	47.25MC	"	"	A2, A3	"
3.	"	"	"	42.65MC	"	"	A4, A5	Adjust for maximum deflection.
4.	"	"	"	45.3MC	"	"	A6, A7	"
5.	"	"	43MC (10MC Swp)	42.25MC 45.0MC 45.75MC	"	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A8, A9	Adjust for response curve similar to Fig.1.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	43MC (10MC Swp)	41.25MC 42.25MC 45.0MC 45.75MC 47.25MC	Any	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.		Check for response similar to Fig. 2. If necessary, retouch A4 thru A9 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A10, A11	Remove volume control from front panel. A 11 is accessible thru mounting hole. Adjust A10 and A 11 for maximum deflection.
8.	"	"	"	"	DC probe to point (C). Common to chassis.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A10, A11	Remove volume control from front panel. A 11 is accessible thru the mounting hole. Disconnect stabilizer capacitor C4. Adjust A10 and A 11 for curve of maximum amplitude and symmetry as in Fig. 3.
8.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A12	Reconnect capacitor C4. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A 11 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.001MFD	High side to point (A). Low side to chassis.	Not used	4.5MC (400∿Mod)	Any	Vert. Amp. thru detector (Fig.5) to pin 2 of picture tube. Low side to chassis.	A13	Adjust for MINIMUM 400∿ indication on scope.

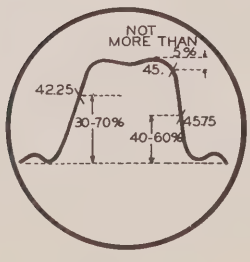


FIG.1

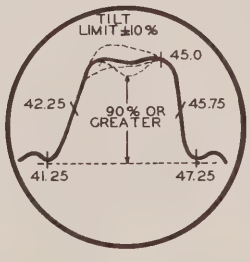


FIG.2

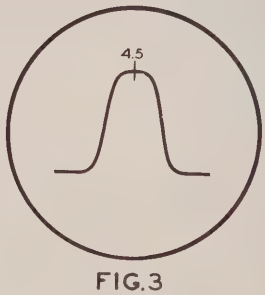


FIG.3

ALIGNMENT INSTRUCTIONS (CONT.)

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L. F. [illegible] SHIP

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft.
The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizonal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A14	Adjust to place marker in trap notch on low frequency side of IF response curve.
			207MC (10MC Swp)	209.75MC	12		A15	
			201MC (10MC Swp)	203.75MC	11		A16	
			195MC (10MC Swp)	197.75MC	10		A17	
			189MC (10MC Swp)	191.75MC	9		A18	
			183MC (10MC Swp)	185.75MC	8		A19	
			177MC (10MC Swp)	179.75MC	7		A20	
			85MC (10MC Swp)	87.75MC	6		A21	
			79MC (10MC Swp)	81.75MC	5		A22	
			69MC (10MC Swp)	71.75MC	4		A23	
			63MC (10MC Swp)	65.75MC	3		A24	
			57MC (10MC Swp)	59.75MC	2		A25	

RF AND MIXER ALIGNMENT

Connect the bias battery as under Video IF Alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (D). Low side to chassis.	A26, A27, A28	Adjust for response curve similar to Fig. 6.
12.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 6. If markers fall below 70% on any channel make slight compromise adjustment of A26, A27, and A28 with the channel switch set to that channel, then check all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

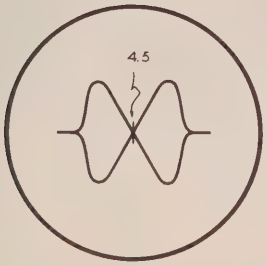


FIG. 4

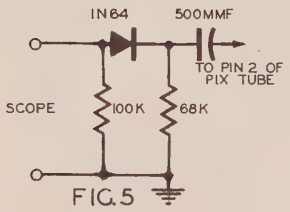


FIG. 5

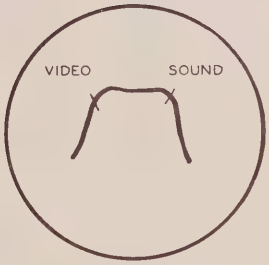
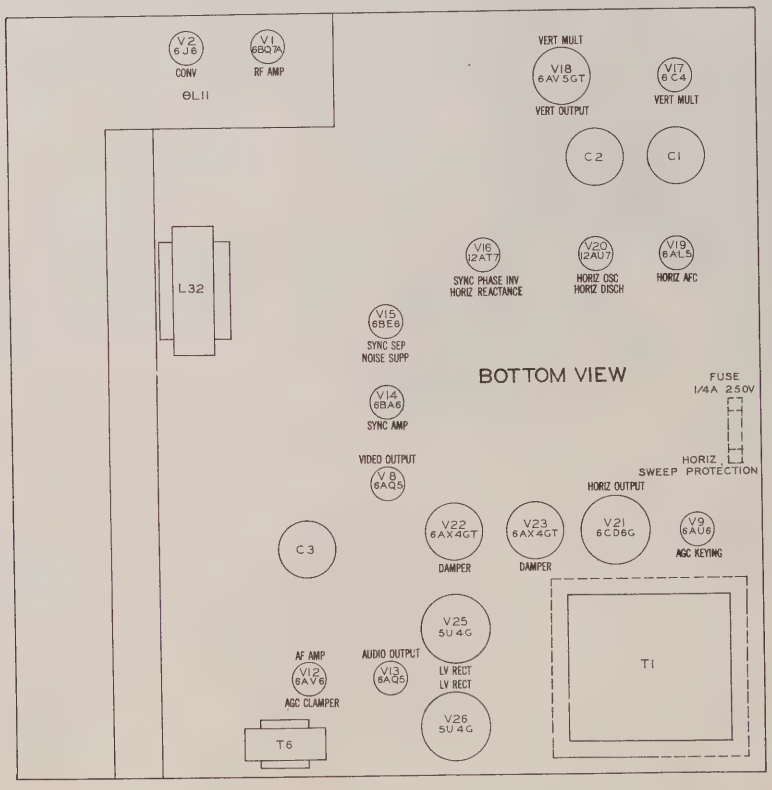


FIG. 6

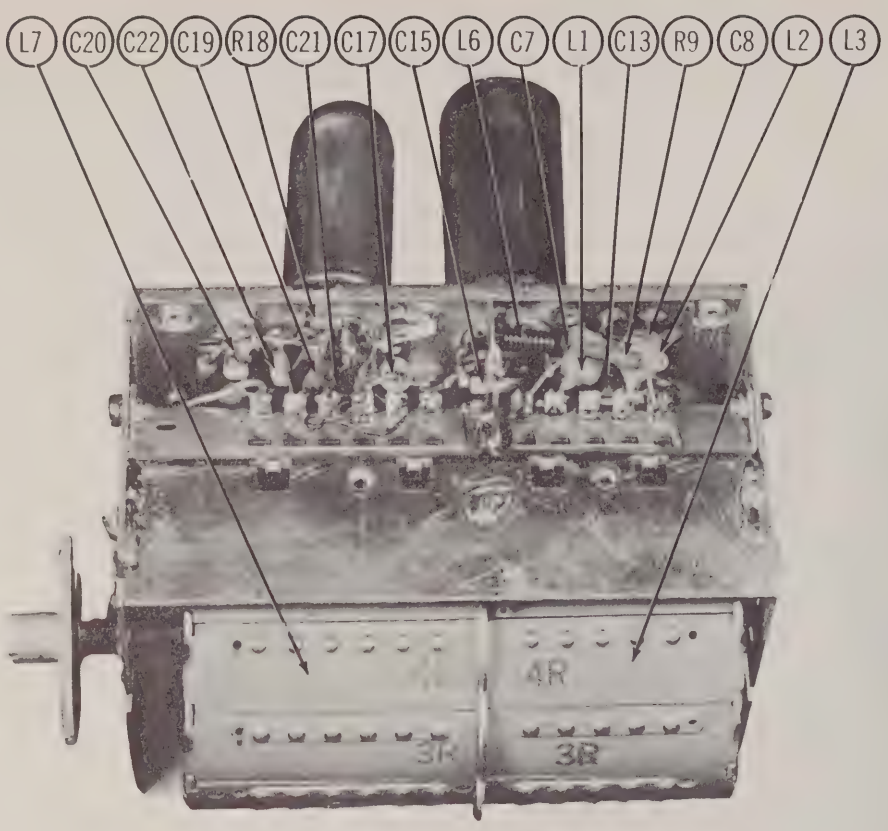
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7GTA	INF	440KΩ	33Ω	.1Ω	0Ω	†2.2KΩ	100KΩ	INF	0Ω
V 2	6J6	†6.4KΩ	†17KΩ	.1Ω	0Ω	235KΩ	10KΩ	0Ω		
V 3	6CB6	53KΩ	47Ω	0Ω	.1Ω	†3.7KΩ	†5KΩ	0Ω		
V 4	6CB6	45KΩ	47Ω	0Ω	.1Ω	†3.7KΩ	†5KΩ	0Ω		
V 5	6CB6	.2Ω	150Ω	0Ω	.1Ω	†3.7KΩ	†3.7KΩ	0Ω		
V 6	6CB6	.2Ω	150Ω	0Ω	.1Ω	†1.7KΩ	†1.7KΩ	0Ω		
V 7	6X8	0Ω	4.4KΩ	†3KΩ	.1Ω	0Ω	0Ω	75Ω	†2.7KΩ	†2.7KΩ
V 8	6AQ5	1 Meg	825Ω	0Ω	.1Ω	†3.3KΩ	†1.5KΩ	1 Meg		
V 9	6AU6	† 35KΩ	†4.1KΩ	†1.8KΩ	†1.8KΩ	183KΩ	†28.5Ω	† 4.9KΩ		
V 10	6AU6	10KΩ	0Ω	0Ω	.1Ω	†2.7KΩ	†2.7KΩ	0Ω		
V 11	6AL5	6.8KΩ	6.8KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 12	6AV6	10Meg	0Ω	0Ω	.1Ω	† 440KΩ	† 440KΩ	†332KΩ		
V 13	6AQ5	470KΩ	680Ω	0Ω	.1Ω	†2.5KΩ	†2KΩ	470KΩ		
V 14	6BA6	47KΩ	0Ω	0Ω	.1Ω	†32KΩ	†12KΩ	0Ω		
V 15	6BE6	377KΩ	0Ω	0Ω	.1Ω	13KΩ	9.5KΩ	1.5Meg		
V 16	12AT7	†5.6KΩ	1.4Meg	470Ω	0Ω	0Ω	†12KΩ	†3.9Meg	0Ω	.1Ω
V 17	6C4	†1.9Meg	INF	.1Ω	0Ω	†1.9Meg	800KΩ	0Ω		
V 18	6AV5GT	2.2Meg	0Ω	650Ω	INF	†570Ω	0Ω	.1Ω	†22KΩ	
V 19	6AL5	940KΩ	482KΩ	.1Ω	0Ω	0Ω	0Ω	482KΩ		
V 20	12AU7	▲340KΩ	1 Meg	0Ω	0Ω	0Ω	†5.6KΩ	470KΩ	20Ω	.1Ω
V 21	6CD6G	†12KΩ	.1Ω	0Ω	INF	1 Meg	INF	0Ω	†12KΩ	Top Cap ▲50Ω
V 22	6AX4GT	†28.5Ω	INF	1.4Meg	INF	†38.5Ω	INF	†1.8KΩ	†1.8KΩ	
V 23	6AX4GT	†28.5Ω	INF	1.4Meg	INF	†38.5Ω	INF	†1.8KΩ	†1.8KΩ	
V 24	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ▲470Ω
V 25	5U4G	INF	7.9KΩ	INF	7.8Ω	INF	8.2Ω	INF	7.9KΩ	
V 26	5U4G	INF	7.9KΩ	INF	7.8Ω	INF	8.2Ω	INF	7.9KΩ	
V 27	27GP4	0Ω	1 Meg	Pin 10 ▲480KΩ	Pin 11 120KΩ	Pin 12 .1Ω				

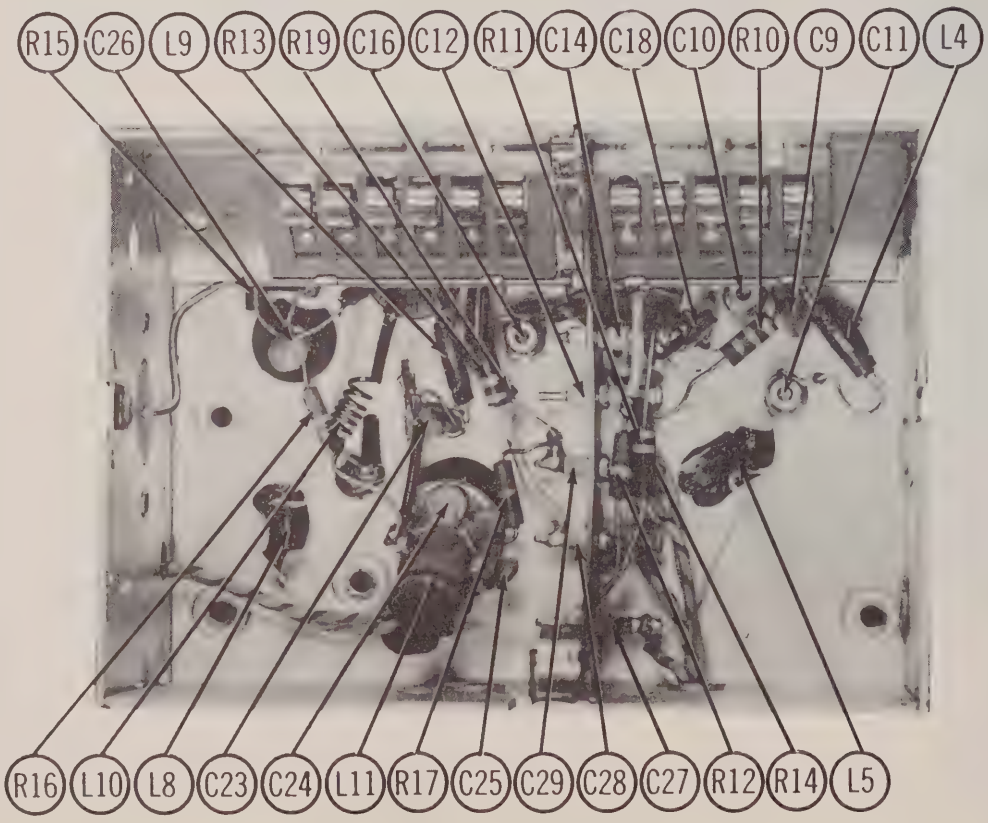
† MEASURED FROM PIN 8 OF V25.
▲ MEASURED FROM PIN 3 OF V22.



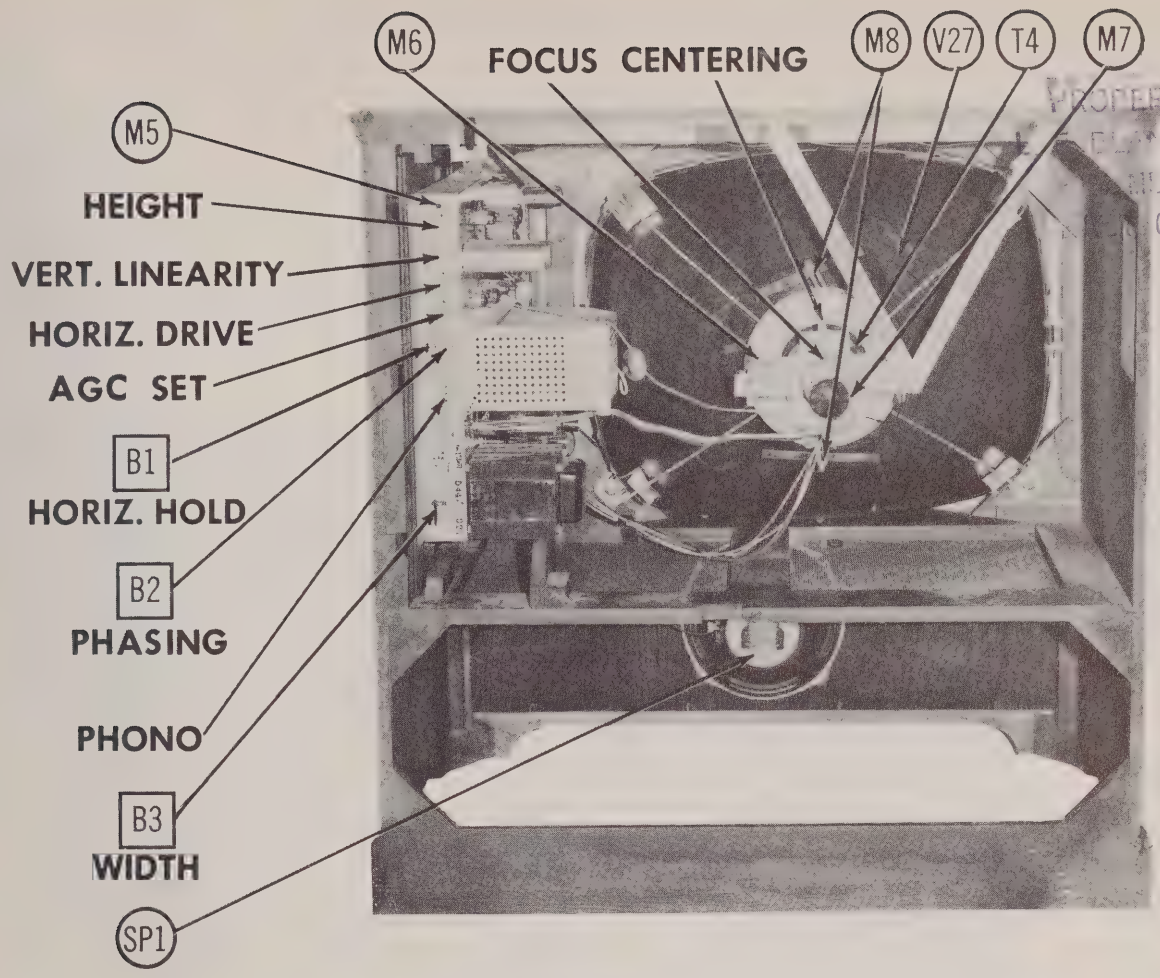
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



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COLORADO

CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

If the horizontal synchronization is unsatisfactory make the following adjustments:

1. Remove the horizontal discriminator tube, V19, from its socket and adjust the horizontal hold slug (B1) until the picture moves from side to side with one vertical blanking bar.
2. Replace V19 and picture should fall into sync as soon as the tube reaches operating temperature.
3. Check the horizontal phasing. By means of the centering control, move the raster to the left so that the right hand edge of the raster is visible. Reduce the contrast and increase the brightness until the blanking bar is visible at the right hand edge of the picture. The bar should be approximately 3/16 to 1/4 inch in width.

   If necessary, adjust the horizontal phasing slug (B2) for this condition. If considerable adjustment of B2 is required it may be necessary to readjust B1 as in Step 1, above.

Adjust the horizontal drive control for maximum scan. If vertical white lines appear at center of picture, back off the horizontal drive control slightly to eliminate them.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

AGC ADJUSTMENT

This control is factory adjusted to provide a 100 Volt peak to peak signal at the output of the sync amplifier, and should give satisfactory reception under most conditions. If advanced too far clockwise overloading of the video amplifier may occur, or on strong signals, blocking may occur when the noise limiting switch is in the "On" position.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "LOSS OF SWEEP".

INSUFFICIENT SWEEP

Check width control. Check by substitution V20, V21, V22, V23, V25 and V26. Check B+. Check waveform W19;

If Insufficient	If Sufficient
Check components of V20 and coupling network between V20 and V21. Check drive control and associated components.	Check all components of horizontal output tube including the screen bypass capacitor C99. Check components of damper circuit.

DRIVE LINES

Check by substitution V20 and V21. Check drive control. Check coupling and waveshaping network between V20 and V21.

COMPRESSED AT LEFT SIDE

Substitute V21, V22 and V23. Check T2, T4A and associated components.

XMAS TREE EFFECT (Fig. 1)

Check components of reatance tube, particularly C87 for open.

VERTICAL

LOSS OF SWEEP

Substitute V17 and V18. Check waveform W11;

If Insufficient	If Sufficient
Check all components of horizontal multivibrator. Check coupling and waveshaping network between M.V. and vertical output.	Check waveform at W12.

Check waveform at W12;

If Insufficient	If Sufficient
Check all components of vertical output stage, especially T3.	Check T4B. Check solder connections in sweep plug, male and female.

INSUFFICIENT SWEEP

Substitute V17 and V18. Follow procedure outlined under "LOSS OF SWEEP".

COMPRESSED TO APPROX. 3 INCHES AND INVERTED

Check C76 for open circuit.

COMPRESSED AT BOTTOM

Check C73 for leaky condition and C1c for open.

SYNC

HORIZONTAL

LOSS OF SYNC

Check by substitution V9, V14, V15, V16, V19 and V20. Check waveform W6;

If Unsatisfactory	If Satisfactory
Check components of video detector and R38.	Check waveform at W7.

Check waveform W7;

If Unsatisfactory	If Satisfactory
Check all components of V14 and coupling network between V14 and V15.	Check waveform W14.

Check waveform W14;

If Unsatisfactory	If Satisfactory
Check all components of V15 and V16A. Check coupling capacitor C82 for open.	Check waveform W17.

Check waveform W17;

If Unsatisfactory	If Satisfactory
Check components of V19 and V16B, particularly L30 and coupling capacitor C91.	Check all components of V20, especially L31.

PULLING PICTURE

Check C88 for open.

VERTICAL

LOSS OF SYNC

Substitute sync and vertical oscillator tubes. Check waveform W9 and W10;

If Unsatisfactory	If Satisfactory
Check waveforms W6, W7 and W8. Check components of stage where sync signal is lost or distorted. Check vertical integrating network.	Check components of vertical multivibrator. Check coupling and waveshaping network between V17 and V18.

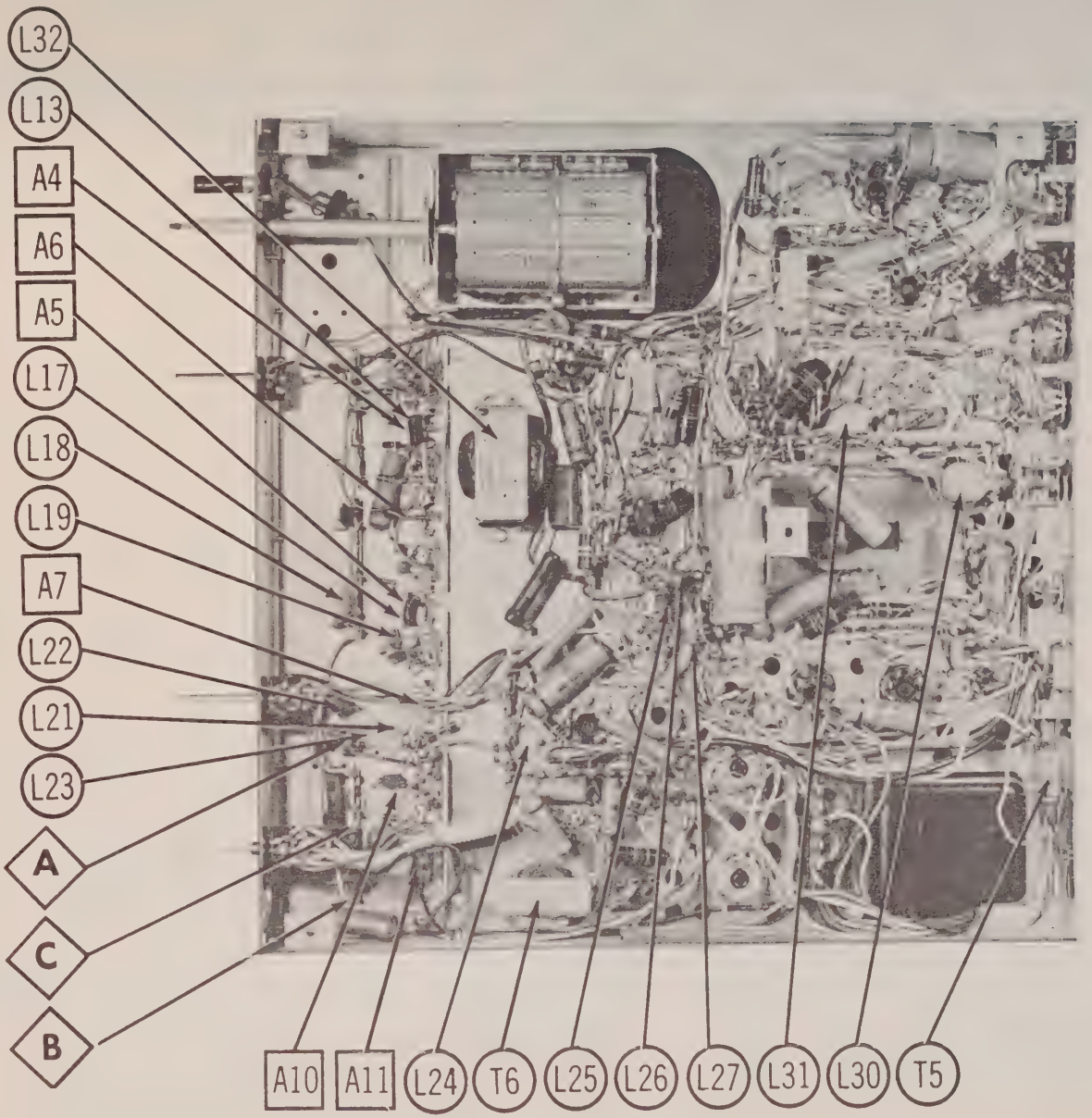
CRITICAL SYNC

Check by substitution V14, V15, V17 and V17. Follow procedure outlined under "LOSS OF SYNC".

TRIGGERING

Dress all filament leads away from grid circuit of vertical oscillator.

XMAS TREE EFFECT
See HORIZ. SWEEP



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7A	6BQ7A	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	4th. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Amp. - 1st. Sound IF Amp.	6X8	6X8	9AK	
V8	Video Suppressor	6AQ5	6AQ5	7BZ	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Detector	6AL5	6AL5	9BT	
V12	AF Amplifier - AGC Clamper	6AV6	6AV6	7BT	
V13	Audio Output	6AQ5	6AQ5	7BZ	
V14	Sync Amplifier	6BA6	6BA6	7BK	
V15	Sync Separator - Noise Suppressor	6BE6	6BE6	7CH	
V16	Sync Phase Inv. - Horiz. Reactance	12AT7	12AT7	9A	
V17	Vert. Multivibrator	6C4	6C4	6BG	
V18	Vert. Multivibrator - Vert. Output	6AV5GT	6AV5GT	6CK	
V19	Horiz. AFC	6AL5	6AL5	6BT	
V20	Horiz. Oscillator - Horiz. Discharge	12AU7	12AU7	9A	
V21	Horiz. Output	6CD6G	6CD6G	5BT	
V22	Damper	6AX4GT	6AX4GT	4CG	
V23	Damper	6AX4GT	6AX4GT	4CG	
V24	HV Rectifier	1B3GT	1B3GT	5C	
V25	LV Rectifier	5U4G	5U4G	5T	
V26	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: CAPEHART PART No.	REPLACEMENT DATA: SYLVANIA	RTMA BASE TYPE	NOTES
V27	27GP4	27GP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CAPEHART PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	±80	400	750090B-34	AFH3-122		CO89		FP420.6	TVL-3684	
B	±40	400								
C	±100	50								
C2A	±80	400	750090B-33	AFH3-140		CO37		FP378	TVL-4659	
B	±40	350		PR2450/80		BR102A		TC22		
C	±10	350								
D	10	25								
C3A	±100	25				C104		FP385	TVL-4696	
B	±10	350	750090B-36	AFH3-140						
C	±40	350		PR525/25		BR252A		TC26		
D	25	25								
C4	5	150	650228A-10	PR3150/4		BR415		TC40	TVA-1402	
C5	20	450	650228 A-12	PR3450/20		BR2045A		TC75	TVA-1708	
C6	2	150	650228A-11	PR3150/4		BR345		TC40	TVA-1402	
C7	68									
C8	68									
C9	3		SI3NP0				NP0K-030	ZT-553		
C10	3-9				829-10					
C11	3-9				829-10					
C12	1000		CN-1-001		MFT-1000				503C-D1	
C13	3		SI3NP0				NP0K-030	ZT-553		
C14	1000		CN-1-001		MFT-1000				503C-D1	
C15	1000		CN-1-001		MFT-1000				503C-D1	
C16	.5-3				829-3			CT565A		
C17	120		BPD-00012		D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C18	1000		BPD-001		DD-102	TM5D1	801-001	DC-521	5HK-D1	
C19	47		BPD-000047		D6-470	TM5Q6	GP1K-470	UC-5447	5GA-Q47	
C20	.5-3				829-3			CT565A		
C21	10		SI10NP0		TCZ-10		NP0K-100	ZT-541	5TCC-Qi	
C22	5		SI5N750		TCN-5		N750K-050	NT-555	5TCUB-V5	
C23	1000		BPD-001		DD-102	TM5D1	801-001	DC-521	5HK-D1	
C24	6.8		SI6.8NP0		TCZ-6.8		NP0K-6R8	ZT-5563	5TCCB-V68	
C25	1000		BPD-001		DD-102	TM5D1	801-001	DC-521	5HK-D1	
C26	1000		BPD-001		DD-102	TM5D1	801-001	DC-521	5HK-D1	
C27	1000		CN-1-001		MFT-1000				503C-D1	
C28	1000		CN-1-001		MFT-1000				503C-D1	
C29	1000		CN-1-001		MFT-1000				503C-D1	
C30	1000	450	450469A-5		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C31	1000	450	450469A-5		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C32	1000	450	450469A-5		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C33	1000	450	450469A-5		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C34	1000		450469A-1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C35	5000		450469A-1		BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5
C36	1000		450469A-1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C37	.1	200	2246-1040		P288-1		DF-104	P73P1	PT401	2TM-P1
C38	1000		450469A-5		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C39	1000		450469A-1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C40	1000		450469A-1		BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5
C41	1000		450469A-5		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C42	1000		450469A-1		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C43	1000		450469A-5		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C44	1000		450469A-5		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C45	1000		450469A-5		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C46	1000		450469A-5		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C47	1000		450469A-5		BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1
C48	.1	600	2248-1040		P288-1	DF-104	PT8SP1		PT601	6TM-P1

PARTS LIST AND DESCRIPTIONS

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CAPEHART PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C49	68		±50030A-15							
C50	.1	500	2246-1040	P288-1		DF-104	PT6SP1		PT601	6TM-P1
C51	.1	200	2246-1040	P288-1		DF-104	PJ2P1		PT401	2TM-P1
C52	.01	500	2245-1030	P288-01		D6-103	PT6S81	GP2-333-103	PT611	6TM-S1
C53	10		±50030A-16							
C54	5000		450469A-1	BPD-005		MD-502	TM5D5	811-005	DC-525	5HK-D5
C55	47		030030A-17	8147N750		TCN-47		N750K-470	NT-5447	5TCU-Q47
C56	5000		450469A-1	BPD-005		MD-502	TM5D5	811-005	DC-525	5HK-D5
C57	1000	500	650233A-12	1464-001			IR5D1		MCB256	MS-24
C58	.001	500	2248-1020	P68-001		D6-102	PT6SD1	GP2L-102	PT621	6TM-D1
C59	.0047	600	2246-4720	P688-0047		D6-472	PT6SD47	GP2-333-472	PT6247	6TM-D47
C60	.01	500	2246-1030	P688-01		D6-103	PT6S81	GP2-333-103	PT611	6TM-S1
C61	.01	600	2248-1030	P688-01		D6-103	PT6S81	GP2-333-103	PT611	6TM-S1
C62	.01	500	2245-1030	P688-01		D6-103	PT6S81	GP2-333-103	PT611	6TM-S1
C63	.047	600	2246-4730	1465-0001			5R5T1		MCB235	MS-31
C64	.047	600	2248-4730	P688-047		DF-503	PT6S47		PT647	6TM-S47
C65	.047	600	2246-4730	P688-047		DF-503	PT6S47		PT647	6TM-S47
C66	.1	200	2245-1040	P288-1		DF-104	PJ2P1		PT401	2TM-P1
C67	.047	600	2248-4730	P688-047		DF-503	PT6S47		PT647	6TM-S47
C68	390	500	2272-21391	1469-0004			5R5T4		MCB243	MS-34
C69A	2000		P688-002				PT6SD2		PT622	
B	5000		±653214A-1	P688-005	±PC-100		PT6SD5	±1405-01	PT625	±10IC1
C	5000		P688-005				PT6SD5		PT625	
C70	.001	600	2248-1020	P688-001		D6-102	PT6SD1	GP2L-102	PT621	6TM-D1
C71	390	500	2272-21391	1469-0004			5R5T4		MCB243	MS-34
C72	.033	600	2248-3339							
C73	.1	600	2248-1040	P288-1		DF-104	PT6SP1		PT601	6TM-P1
C74	.022	600	2248-2230	P688-022			PT6S822		PT6122	6TM-S22
C75	.01	300	2248-1030	P688-01		D6-103	PT6S81	GP2-333-103	PT611	6TM-S1
C76	.0033	1000	2249-3320	P1068-0033			PT6S1D33		PT61233	MB-D33
C77	.068	400	2246-6839	P2268-068			PT6S6B8			6TM-S68
C78	.047	600	2248-4730	P688-047		DF-503	PT6S47		PT6147	6TM-S47
C79	.022	600	2248-2230	P688-022		DF-803	PT6S822		PT6122	6TM-S22
C80	.047	600	2248-4730	P688-047		DF-503	PT6S47		PT6147	6TM-S47
C81	.1	200	2245-1040	P288-1		DF-104	PJ2P1		PT401	2TM-P1
C82	100	500	2272-23101	1469-0001			5R5T1		MCB235	MS-31
C83	100	500	450469A-7	BPD-001	DD-102		TM5D1	801-001	DC-521	5HK-D1
C84	1000		450469A-7	BPD-001	DD-102		TM5D1	801-001	DC-521	5HK-D1
C85	.0047	600	2248-4725							
C86	.0047	600	2246-4720	P688-0047		D6-472	PT6SD47	GP2-333-472	PT6247	6TM-D47
C87	.047	200	2245-4730	P268-047		DF-503	PT6S47		PT6147	2TM-S47
C88	.22	200	2245-2240	P488-22			PT6P23		PT4025	2TM-P22
C89	.0033	600	2248-3325							
C90	22	500	2272-22320							
C91	.001	600	2248-1020	P688-001		D6-102	PT6SD1	GP2L-102	PT621	6TM-D1
C92	.047	600	2248-4730	P688-047		DF-503	PT6S47		PT6147	6TM-S47
C93	.022	600	2248-2230	P688-022			PT6S822		PT6122	6TM-S22
C94	.01	600	2248-1030	P688-01		D6-103	PT6S81	GP2-333-103	PT611	6TM-S1
C95	820	500	2272-41821							
C96	.047	600	2248-4730	P688-047		DF-503	PT6S47		PT6147	6TM-S47
C97	.01	600	2248-1030	P688-01		D6-103	PT6S81	GP2-333-103	PT611	6TM-S1
C98	.001	600	2248-1020	P688-001		D6-102	PT6SD1	GP2L-102	PT621	6TM-D1
C99	.047	600	2248-4730	P688-047		DF-503	PT6S47		PT6147	6TM-S47
C100	1.0	400	2247-1050	484-1.0			P24W1		PT41	TC-10
C101	68	4000	450954A-4	HVD60-00000-68						
C102	68	4000	450954A-4	HVD60-00000-68						Note 2
C103	.1	500	2246-1040	P688-1			PT6SP1		PT601	6TM-P1
C104	500	30000	453350A-1							
C105	.1	600	2248-1040	P688-1		DF-104	PT6SP1		PT601	6TM-P1
C106	47	2000							20GA-Q47	
C107	1500		450469A-2	BPD-0015	DD-152	TM5D15	801-0015	DCD-5215	5HK-D15	
C108	1500		450469A-3	BPD-0015	DD-153	TM5D15	801-0015	DCD-5215	5HK-D15	
C109	.1	200	2245-1040	P288-1		DF-104	PJ2P1		PT401	2TM-P1

Note 1. In some Models C78 and C79 are replaced by one .068MFD, 600V unit (part #2248-6839).
Note 2. Not used in all Models.
* Items C69A, C69B, C69C, R86A, R86B, R86C are combined in one unit.

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CAPEHART PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	200KΩ	½	453J17C-1	QJ-373*	RTV-368		UF25L	Shading-Panel
B	1.5Meg	½					UR28A	Volume-Rear
C	Switch						US-27	Attach to R1B
R2A	1500Ω	½	453J18B-2	QJ7-109	AG-11-5	B-6-5	U-6	Contrast
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
C	Switch		Not Req.	Not Req.	SWB-2	Not Req.	US-27	Attach to R2A
R3A	1 Meg	½	453J15B-1	Q11-137	AG-61-5	B-69	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
R4A	10KΩ	½	453J17A-1	Q11-116	AG-27-5	AB-14	SU-20	AGC
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	250KΩ	½	453J14A-1	Q11-130	AG-55-5	AB-50	SU-46	Horiz. Drive
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	2000Ω	2	450883A-2	WK-2000	A43-2000		R2300L	Vert. Linearity-Wire Wound
B	Shaft		Not Req.	Not Req.	FKS-1/4		Not Req.	Attach to R6A
R7A	2.5Meg	½	453733A-1	Q11-239	AG-84-5	AB-83	SU-565	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A
R8	200Ω	1						Balancing-WireWound

* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B11-129 & P1-118 (Panel) B13-139 & R2-304 (Rear) & SWITCH 76-2.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CAPEHART PART No.	IRC PART No.	NOTES
R9	15KΩ	½		BTS-15K	
R10	47KΩ	½			
R11	33Ω	½		BTS-33	
R12	220KΩ	½		BTS-220K	
R13	47Ω	½		BTS-470	
R14	180KΩ	½			
R15	15KΩ	½			
R16	220KΩ	½		BTS-220K	
R17	15KΩ	½			
R18	10KΩ	½		BTS-10K	
R19	4700Ω	½		BTS-4700	
R20	2200Ω	2	3235-222	BTB-220	
R21	3.9Ω	2			
R22	12KΩ	½	3229-123	BTS-12K	
R23	8200Ω	½	3229-822		
R24	47Ω	½	3229-470	BTS-47	

RESISTORS (CONT.)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CAPEHART PART No.	IRC PART No.	NOTES
R25	330Ω	½	3229-332	BTS-3300	
R26	220Ω	½	3229-221	BTS-220	
R27	4700Ω	½	3229-472	BTS-4700	
R28	12KΩ	½	3229-123	BTS-12K	
R29	47Ω	½	3229-470	BTS-47	
R30	3300Ω	½	3229-332	BTS-3300	
R31	220Ω	½	3229-221	BTS-220	
R32	5600Ω	½	3229-562		
R33	150Ω	½	3229-151	BTS-150	
R34	5200Ω	½	3229-521	BTS-5200	
R35	5600Ω	½	3229-562		
R36	150Ω	½	3229-151	BTS-150	
R37	4700Ω	½	3229-472	BTS-4700	
R38	10KΩ	½	3229-103	BTS-10K	
R39	1200Ω	½	3229-122	BTS-1200	
R40	1 Meg	½	3229-105	BTS-1 Meg	
R41	1 Meg	½	3229-105	BTS-1 Meg	
R42	680Ω	1	3232-681	BTA-680	
R43	3300Ω	1	3232-332	BTA-3300	
R44	1 Meg	½	3229-105	BTS-1 Meg	
R45	100KΩ	½	3229-104	BTS-100K	
R46	220KΩ	½	3229-224	BTS-220K	
R47	820Ω	½	3229-821	BTS-820	
R48	3300Ω	½	3229-332	BTS-3300	
R49	10KΩ	1	3232-103	BTA-10K	
R50	3300Ω	½	3229-332	BTS-3300	
R51	680KΩ	½	3229-684	BTS-680K	
R52	3.3Meg	½	3229-335	BTS-3.3Meg	
R53	270KΩ-5%	½	3228-274	BTS-270K-5%	
R54	150KΩ-5%	½	3228-154	BTS-150K-5%	
R55	33KΩ	½	3229-333	BTS-33K	
R56	1000Ω	½	3229-102	BTS-1000	
R57	1000Ω	½	3229-102	BTS-1000	
R58	10KΩ	½	3229-103		
R59	1000Ω	½	3229-102	BTS-1000	
R60	68KΩ	½	3229-683	BTS-68K	
R61	6800Ω	½	3229-682	BTS-6800	
R62	6800Ω	½	3229-682	BTS-6800	
R63	1 Meg	½	3229-105	BTS-1 Meg	
R64	10Meg	½	3229-106	BTS-10Meg	
R65	330KΩ	½	3229-334	BTS-330K	
R66	68KΩ	½	3229-683	BTS-68K	
R67	470KΩ	½	3229-474	BTS-470K	
R68	680Ω	1	3232-681	BTA-680	
R69	2000Ω	7	650101A-23	1 3/4A-2000	
R70	47KΩ	½	3229-473	BTS-47K	
R71	10KΩ	½	3229-103	BTS-10K	
R72	10KΩ	1	3232-103	BTA-10K	
R73	22KΩ	½	3235-223	BTB-22K	
R74	330KΩ	½	3229-334	BTS-330K	
R75	4.7Meg	½	3229-475	BTS-4.7Meg	
R76	1.5Meg	½	3229-155	BTS-1.5Meg	
R77	27KΩ	1	3232-273	BTA-27K	
R78	330KΩ	½	3229-334	BTS-330K	
R79	12KΩ	½	3229-123	BTS-12K	
R80	15KΩ	½	3229-153	BTS-15K	
R81	3.9Meg	½	3229-395	BTS-3.9Meg	
R82	10KΩ	½	3229-103	BTS-10K	
R83	10KΩ	½	3229-103	BTS-10K	
R84	22KΩ	2	3235-223	BTB-22K	
R85	22KΩ	2	3235-223	BTB-22K	
R86A	22KΩ	½		BTS-22K	
B	82000Ω	½	±653214A-1	BTS-82000	
C	82000Ω	½		BTS-82000	
R87	390KΩ	½	3229-225	BTS-390K	Note 1
R88	100KΩ	½	3229-104	BTS-100K	
R89	39KΩ	½	3229-393	BTS-39K	
R90	120KΩ	½	3229-124	BTS-120K	
R91	12KΩ	½	3229-123	BTS-12K	
R92	10KΩ	½	3229-103	BTS-10K	
R93	470KΩ	½	3229-474	BTS-470K	
R94	2.2Meg	½	3229-225	BTS-2.2Meg	
R95	270Ω	1	3232-271	BTA-270	Note 2
R96	270Ω	1	3232-271	BTA-270	Note 2
R97	270Ω	1	3232-271	BTA-270	Note 2
R98	270Ω	1	3232-271	BTA-270	Note 2
R99	22KΩ	1	3232-223	BTA-22K	
R100	33KΩ	½	3229-333	BTS-33K	
R101	22KΩ	½	3229-223	BTS-22K	Note 3
R102	270Ω	1	3232-271	BTA-270	
R103	18KΩ	½	3229-183	BTS-18K	
R104	560Ω	½	3229-561	BTS-560	
R105	560Ω	½	3229-561	BTS-560	
R106	390Ω	½	3229-391	BTS-390	
R107	470KΩ	½	3229-474	BTS-470K	
R108	470KΩ	½	3229-474	BTS-470K	
R109	470KΩ	½	3229-474	BTS-470K	
R110	10KΩ	½	3229-103	BTS-10K	
R111	10KΩ	½	3229-103	BTS-10K	
R112	12KΩ	½	3229-123	BTS-12K	
R113	12KΩ	½	3229-123	BTS-12K	
R114	1000Ω	½	3229-102	BTS-1000	
R115	5600Ω	1	3232-562	BTA-5600	
R116	470Ω	½	3229-471	BTS-470	
R117	470KΩ	½	3229-474	BTS-470K	
R118	22KΩ	½	3229-223	BTS-22K	
R119	5600Ω	1	3232-562	BTA-5600	
R120	1 Meg	½	3229-105	BTS-1 Meg	
R121	560KΩ	½	3229-564	BTS-560K	Note 4
R122	560KΩ	½	3229-564	BTS-560K	Note 4
R123	470KΩ	½	3229-474	BTS-470K	
R124	1 Meg	½	3229-105	BTS-1 Meg	
R125	15KΩ	½	3229-153	BTS-15K	
R126	1 Meg	½	3229-105	BTS-1 Meg	
R127	47Ω	½	3229-470		
R128	68Ω	½	3229-680		
R129	47KΩ	1	3232-473	BTA-47K	Note 5
R130	47KΩ	1	3232-473	BTA-47K	Note 5
R131	51KΩ	1	3232-513		Note 5
R132	51KΩ	1	3232-513		Note 5
R133	10KΩ	½	3229-103	BTS-10K	
R134	10Ω	½	3229-100	BTS-10	
R135	10Ω	½	3229-100	BTS-10	
R136	1000Ω	½	3229-102	BTS-1000	
R137	1 Meg	½	3229-105	BTS-1	
R138	1750Ω	20	750288A-7	2TD-1750	
R139	3500Ω	7	650101A-24	1 3/4A-3500	
R140	15KΩ	10	650106A-6	1 3/4A-15K	
R141	330KΩ	½	3229-334	BTS-330K	

Note 1. Some models may use two resistors in parallel in this application.
Note 2. Some models may use a single 270Ω (2Watt) resistor in this application.
Note 3. Not used in all models.
Note 4. Some models may use a single 270KΩ (1 Watt) resistor in this application.
Note 5. Some models may use a single 47KΩ (1 Watt) resistor in this application.
* Items R86A, R86B, R86C, C69A, C69B, C69C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.
T1	117VAC @2.84A	624VCT .430ADC	5VAC @ 6A	6.3VAC @2.7A SEC.4 6.3VAC @ 10A	750355C-2			TP-235		

TRANSFORMER (SWEEP CIRCUITS)

ITEM No	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	502Ω tap ⑥ 441, 324, 621Ω	0Ω	850346A-1						Horiz. Output Trans.
T3	300Ω	11Ω	750398A-1						Vert. Output Trans.
T4A	30Ω		850347B-1						Horiz. Deflection Coils
B	45Ω								Vert. Deflection Coils
T5	6.5Ω	75Ω	650636A-1						Width & AGC Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T6	8KΩ	3.2Ω	470Ω	.03Ω	650216A-1	A-8114 ①	A-2932 ①	RO-301 ①	S-8X ①	① Drill one new mounting hole.

MODEL 12F272M (Ch. CT-74) CAPEHART

PROPERTY OF

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CAPEHART PART No.	VIKING PART No.	QUAM PART No.	
SP1	10"	PM	3.2Ω	850179A-3	10J11	10A31	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CAPEHART PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	IF Trap	0Ω						Wound on 68MMF Cap.
L2	IF Trap	0Ω						Wound on 68MMF Cap.
L3	Ant. Coils	0Ω CT	0Ω					
L4	IF Trap	1Ω						
L5	Fil. Choke	0Ω						
L6	Neutr. Coil	0Ω						
L7	RF, Mixer Grid & Osc. Coils	0Ω						
L8	Fil. Choke	0Ω						
L9	Feedback Coil	1.6Ω						
L10	RF Choke	0Ω						
L11	Conv. Plate	0Ω	0Ω					
L12	1st. Video IF	.2Ω		650590B-1				
L13	Fil. Choke	0Ω		4502667B-1	19-3001	TV-189	6175	.8 Microhenry
L14	2nd. Video IF	.2Ω	.2Ω	750349B-1				Includes Trap
L15	3rd. Video IF	.2Ω	.2Ω	750349B-1				Includes Trap
L16	4th. Video IF	.2Ω	.2Ω	750349B-1				Includes Trap
L17	Fil. Choke	0Ω		452667B-1	19-3001	TV-189	6175	.8 Microhenry
L18	RF Choke	1.8Ω		450338A-4			4606	2.2 Microhenries, (IRC part #CLA)
L19	RF Choke	1.8Ω		450338A-4			4606	2.2 Microhenries, (IRC part #CLA)
L20	5th. Video IF	.2Ω	.2Ω	750350B-1				Includes 1N64 Crystal detector, 10MMF Cap., 36 Microhenries Series Peaking Coil & 4 microhenries RF Choke
L21	Series Peaking Coil	3.2Ω		650585A-1	19-3075	TV-181	6172	75 Microhenries
L22	Shunt Peaking Coil	7.5Ω		650585A-2	19-3250	TV-185	6181	250 Microhenries
L23	4.5MC Trap	2.4Ω		453225A-1	20-1004 *	TV-151 *	1470 *	Wound on 100MMF Cap.
L24	Series Peaking Coil	4.7Ω		650585A-8	19-3125 †	TV-181 †	4642 †	115 Microhenries, wound on 3.9KΩ resistor
L25	4.5MC Trap	2.4Ω		650591A-2	20-1004	TV-151	1470	
L26	Series Peaking Coil	5.5Ω		650219A-10	19-3125 ■	TV-182	4644 ■	140 Microhenries, wound on 18KΩ resistor
L27	Shunt Peaking Coil	8.5Ω		650220A-5	19-3300		4565	300 Microhenries
L28	Sound IF	4.2Ω		650591A-3	20-1005	TV-151	1470	
L29	Ratio Det.	5.7Ω	1.9ΩCT	650584A-1	17-3497	TV-115	6205	Tertiary Winding -.8Ω
L30	Horiz. Osc.	85Ω	75ΩCT	750352B-1				Cathode Winding -20Ω
L31	Ringing Coil	27Ω		650221A-1	19-1576 *		4672	11 Microhenries

* Drill mounting hole.
† Parallel with 3.9KΩ resistor
■ Parallel with 18KΩ resistor

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	CAPEHART PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L32	.430ADC	28.5Ω	1 Hy.	650587C-2			TR-1325	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			CAPEHART PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG P/T (Slo/Blo)	2/10 A @125V	450183A-2		315.200		MDV 2/10	

MISCELLANEOUS

ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M2	Dial Light	600093A-8	Type #47
M3	RF Tuner	850222B-1	
M4	Crystal (Diode)		Detector (1N64)
M5	Switch	453166A-1	(Noise Limiting)
M6	Focus Magnet	750397A-1	
M7	Ion Trap Magnet	650276A-5	
M8	Correction Magnet	650683A-3	
	Safety Glass	850248A-1	
	Mask	950189A-1	
	Knob	650592A-1	Vert. Hold
	Knob	650592A-2	Contrast
	Knob	650593A-1	Fine Tuning
	Knob	650593A-2	Shading
	Knob	650594B-G4	Off/On Volume
	Knob	650594B-G7	Channel Selector

TROUBLE SHOOTING AIDS (CONT.)

VIDEO

SOUND BARS

Check adjustment of A13 (4.5MC Trap) . Check setting of local oscillator and alignment of video IF stages.

POOR RESOLUTION

Check alignment of tuner and IF stages. Substitute V7 and V8. Check associated components.

SMEAR

Substitute V7 and V8. Check associated components, especially the peaking coils.

ONE BLACK BAR ACROSS SCREEN WITH PULLING EFFECT

Check tuner, video IF and video amplifier tubes for filament to cathode leakage.

POOR CONTRAST

Check video IF tubes and slignment. Check video amplifier tubes. Check associated components.

AUDIO

WEAK OR NO SOUND

Check by substitution V7, V10, V11, V12 and V13. Check circuit components. Check alignment of sound and video IF stages.

BUZZ

Adjust discriminator secondary for minimum buzz. Substitute V11. Check local oscillator setting. Check for overload at waveform W1. If overload exists, check AGC network.

DISTORTED

Check by substitution V7, V10, V11, V12 and V13. Check speaker. Check audio stages using audio signal generator and scope;

If Undistorted	If Distorted
Check alignment and components of sound IF and discriminator.	Substitute tube and check components of stage where distortion occurs.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse located in high voltage cage. Check by substitution V20, V21, V22, V23, and V24. Check waveform W19;

If Unsatisfactory	If Satisfactory
Check all components of V20 and check coupling capacitor between V20 and V21.	Check all components of horizontal output and damper circuit, including T2 and T4A. Check high voltage filter components.

INSUFFICIENT HIGH VOLTAGE

If substitution of V20, V21, V22, V23, V24, V25 and V26. fail to correct trouble, follow procedure outlined under "LOSS OF HIGH VOLTAGE".

BLOOMING

Follow the procedure outlined under "INSUFFICIENT HIGH VOLTAGE".

POWER

SET DEAD

Substitute V25 and V26. Check T1, L32 and filter components. Check AC interlock.

SMALL RASTER AND WEAK SOUND

Substitute V25 and V26. Check B+ components.

DIM PICTURE

Substitute V25 and V26. Check picture tube and B+ components.

GENERAL

RASTER BUT NO SOUND OR PICTURE

Substitute V2 and V6. Check 1N64, crystal diode by substitution. Check associated components.

SOUND BUT NO PICTURE

Check by substitution V7, V9 and the picture tube. Check associated components.

WEAK AND SNOWY PICTURE

Substitute V1, V3, V4, V5 and V6. Check video IF alignment.

The Trouble - Shooting photographs shown above are made with permission of transmitting station WFBM-TV and in no way reflect the quality of the transmitted picture. Similarly, symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the the Channel Selector and Fine Tuning Knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

PICTURE TUBE SAFETY GLASS CLEANING

To remove safety glass, loosen the screw which holds a small catch, located on the underside of chassis shelf at the right front of the cabinet, and slide back the small catch. (On table models a metal plug button is used in place of the catch, pry this plug loose with a screwdriver).

From the exposed hole, pull out the strip of felt, which holds the glass into slots in the sides of the cabinet. Slide the glass to the right until it is free of slot in the cabinet at the left. Tilt the glass forward at the left and remove from cabinet. Use extreme caution when removing the safety glass.

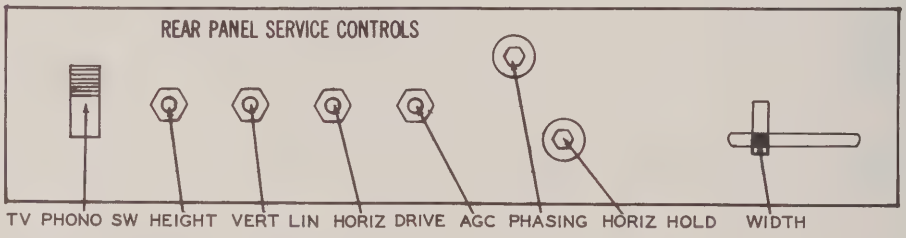
PICTURE TUBE REMOVAL

To remove picture tube from cabinet follow the steps below:

1. Remove picture tube socket, high voltage lead and yoke plug.
2. Remove rear braces from yoke support brackets.
3. Support the tube from the rear, remove four nuts holding tube straps to cabinet.
4. If chassis is still in the cabinet, remove by tilting picture tube around high voltage cage.

CAUTION - Due to size and weight of the 27 inch picture tube, it is recommended that removal not be attempted without assistance.

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS-AGC ADJUSTMENT

If advanced too far clockwise,overloading of the video amplifier may occur, or on strong signals, blocking may occur when the noise limiting switch is in the ON position.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

If synchronization cannot be obtained by adjusting the horizontal hold control, then refer to Horizontal Sweep Circuit Adjustment, page 11.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector buzz, adjust the Ratio Detector Secondary, L29, located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for Horizontal Sweep Circuit protection. (For location, see tube placement chart).

CENTERING

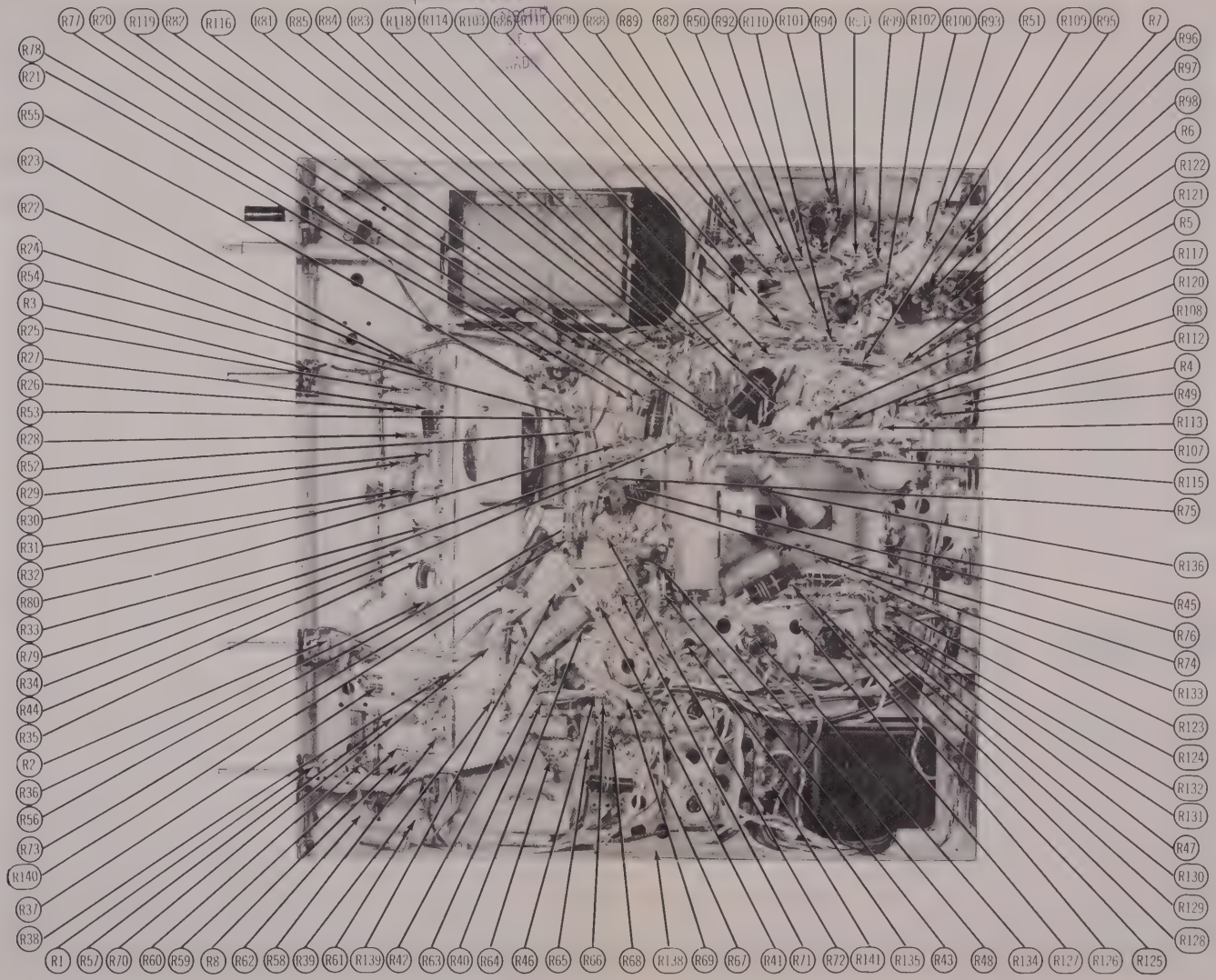
Centering is accomplished mechanically by means of a centering lever on the P. M. Focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

ANTI-PIN CUSHION CORRECTION-BEAM CORRECTOR MAGNET ADJUSTMENT

Adjust the height control so that top and bottom edges of the raster are visible. Check the raster lines near top and bottom for straightness. If lines are bent,correct them by repositioning the corrector magnets.

DISASSEMBLY INSTRUCTIONS

1. Remove 6 push on type control knobs from front panel.
2. Remove 12 wood screws. Remove rear cover.
3. Disconnect built-in antenna. Remove 2 wood screws. Remove antenna strip.
4. Disconnect speaker, yoke plug, HV lead and CRT socket.
5. Remove 5 chassis mounting board screws. (4 at rear, 1 at front near tuner).
6. Slide chassis and mounting board from cabinet.
7. Remove 6 chassis bolts. Remove chassis.
8. Remove 4 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

RAULAND
MODEL 1961

RAULAND
MODEL 1961

TRADE NAME	Rauland Model 1961
MANUFACTURER	Rauland -Borg Corp., 3523 W. Addison St., Chicago 18, Ill.
TYPE SET	AC Operated 60 Watt Audio Booster Amplifier
TUBES (Eight)	Types 6SL7GT AF Amp.-Phase Inv., 6SN7GTA Driver, (2) 6L6 Audio Output, (2) 5U4G Rectifier, (2) 5Y3GT Rectifier
POWER SUPPLY	117/130 Volts AC-60 Cycle RATING 1.22 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

RAULAND MODEL 1961

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		RAULAND PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier-Phase Inverter	6SL7GT	6SL7GT	8BD	
V2	Driver	6SN7GTA	6SN7GTA	8BD	
V3	Audio Output	6L6	6L6	7S	
V4	Audio Output	6L6	6L6	7S	
V5	Rectifier	5U4G	5U4G	5T	
V6	Rectifier	5U4G	5U4G	5T	
V7	Rectifier	5Y3GT	5Y3GT	5T	
V8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RAULAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	125	350	CE-127	AFHS1-73		A041		FP140	TVL-1638	
C2	125	350	CE-127	AFHS1-73		A041		FP140	TVL-1638	
C3	250	50	CE-257A	AFH1-24 PRS50/100		A015 BR10015		FP117 TC3501	TVL-1535 TVA-1311	
C4A	■10	450	CE-306A	AFH3-31		CO24		FP375.8	TVL-3776	
B	10	450								
C	▲10	450								
C5	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C6	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C7	.01	1600		P1688-01		PTE16S1		PT1611	MB-S1	
C8	.01	1600		P1688-01		PTE16S1		PT1611	MB-S1	
C9	.05	600		689ZX-05		TVC6S5		0T106	PX-156	

CONTROLS

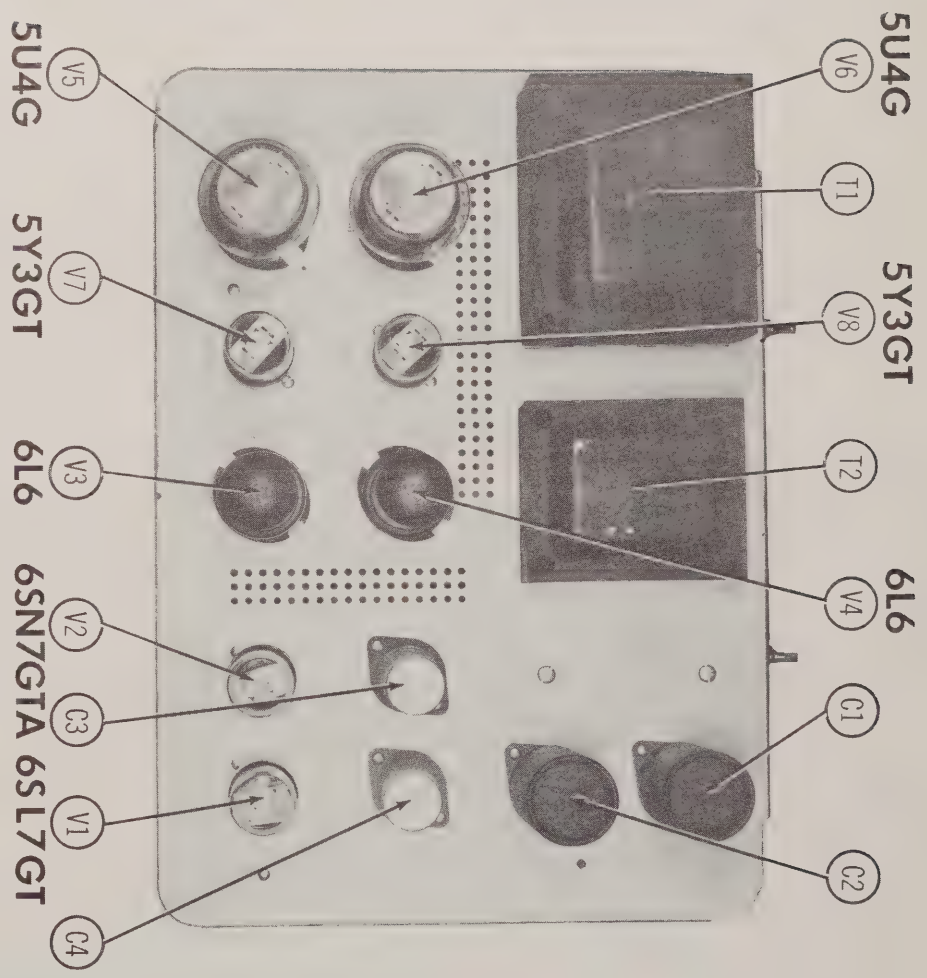
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RAULAND PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	RP-504B-D	Q13-133	AG-60-Z	BSK-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RAULAND PART No.	IRC PART No.	
R2	1000Ω	½		BTS-1000	
R3	68Ω	1			
R4	100KΩ	1½		BTS-100K	
R5	2200Ω	1½		BTS-2200	
R6	1000Ω	1½		BTS-1000	
R7	4700Ω	1½		BTS-4700	
R8	100KΩ	1½		BTS-100K	
R9	100KΩ	1½		BTS-100K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RAULAND PART No.	IRC PART No.	
R10	1000Ω	½		BTS-1000	
R11	100KΩ	½		BTS-100K	
R12	4700Ω	1		BTA-4700	
R13	4700Ω	2		BTB-4700	
R14	470Ω	2		BTB-470	
R15	1000Ω	10		1 3/4A-1000	
R16	750Ω	10		1 3/4A-750	
R17	4.7Ω	½			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	RAULAND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T1	117VAC @1.4A	740VCT tap @ 456VCT .123ADC	144VCT .027ADC	5VAC @6A	LP-0214				
		SEC. 4	SEC. 5	SEC. 6					
		5VAC @2A	5VAC @2A	6.3VCT @ 2.8A					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		RAULAND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T2	3.2KΩ	500Ω tap @ 250Ω, @ 70V, @ 8Ω, @ 4Ω	110ΩCT	31.2Ω tap @ 17Ω, @ 3.56Ω @ .59Ω @ .47Ω	LO-0123					

TRANSFORMER (DRIVER)

ITEM No.	RATING				REPLACEMENT DATA				
	PRI.	SEC. 1	SEC. 2	SEC. 3	RAULAND PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
T3	930Ω CT .045A	192Ω CT			LD-0014				

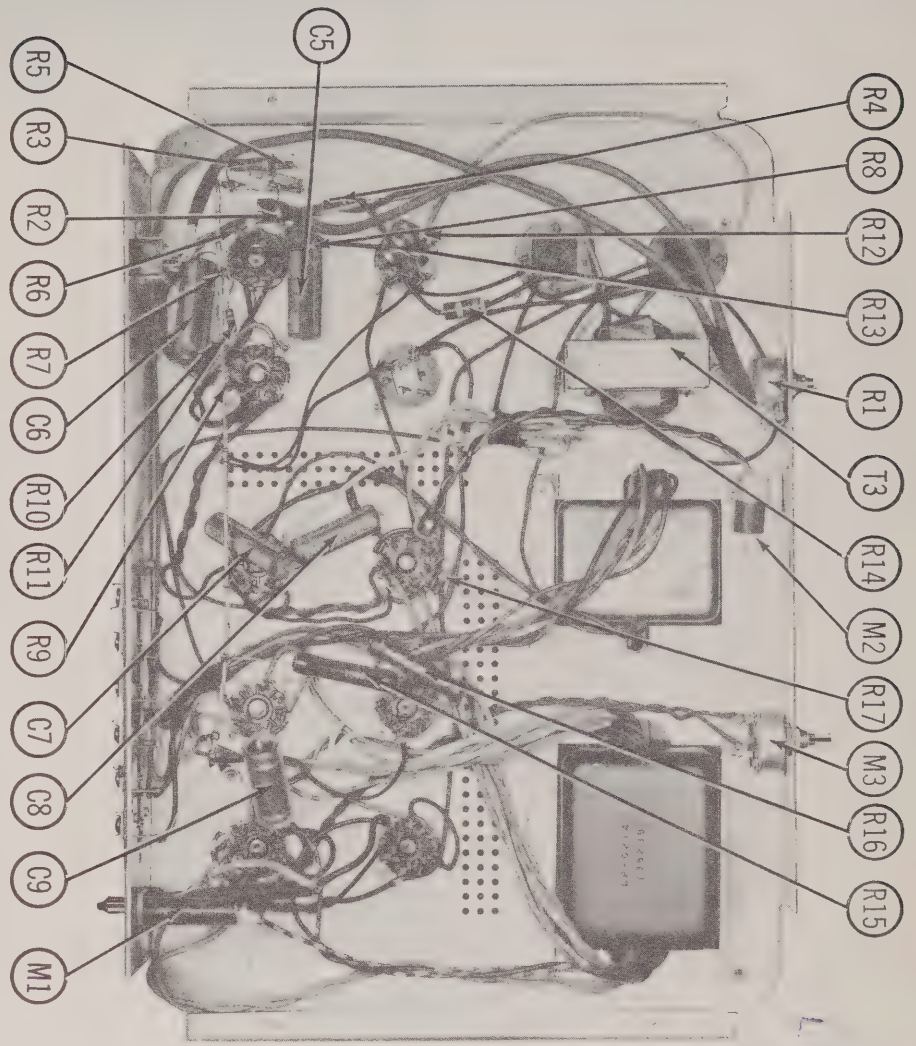
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			RAULAND PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG Slo/Blo	5A @ 125V			313005	341001	MDX5	HKP

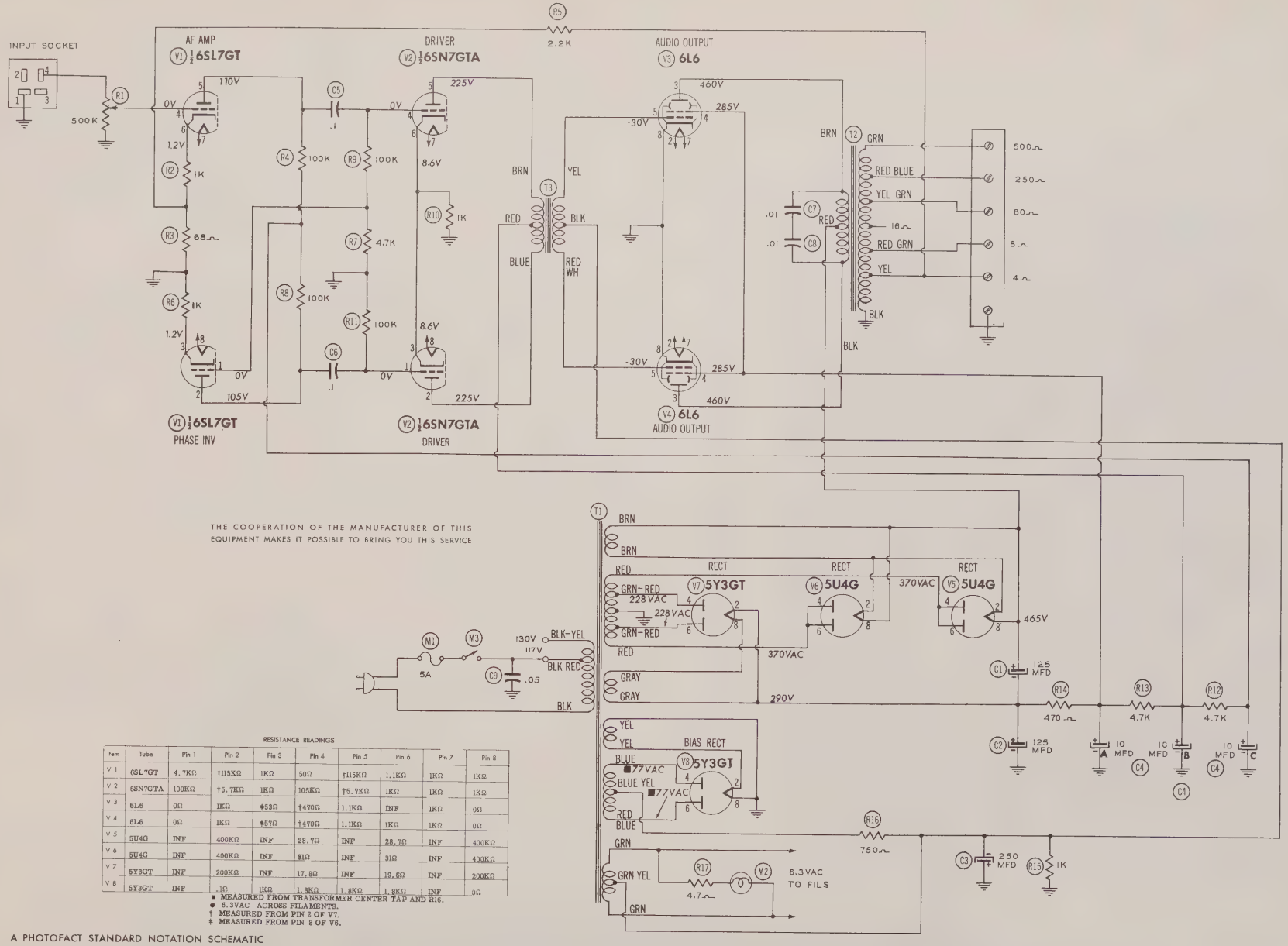
MISCELLANEOUS

ITEM No.	PART NAME	RAULAND PART No.	NOTES
M2	Pilot Bulb		Type #44
M3	Switch	X-0010	Off/On (SPST Rotary)

CHASSIS—BOTTOM VIEW



RAULAND MODEL 1961



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SL7GT	4.7KΩ	†115KΩ	1KΩ	50Ω	†115KΩ	1.1KΩ	1KΩ	1KΩ
V 2	6SN7GTA	100KΩ	†5.7KΩ	1KΩ	105KΩ	†5.7KΩ	1KΩ	1KΩ	1KΩ
V 3	6L6	0Ω	1KΩ	‡53Ω	†470Ω	1.1KΩ	INF	1KΩ	0Ω
V 4	6L6	0Ω	1KΩ	‡57Ω	†470Ω	1.1KΩ	1KΩ	1KΩ	0Ω
V 5	5U4G	INF	400KΩ	INF	28.7Ω	INF	28.7Ω	INF	400KΩ
V 6	5U4G	INF	400KΩ	INF	81Ω	INF	31Ω	INF	400KΩ
V 7	5Y3GT	INF	200KΩ	INF	17.8Ω	INF	19.6Ω	INF	200KΩ
V 8	5Y3GT	INF	.1Ω	1KΩ	1.8KΩ	1.8KΩ	1.8KΩ	INF	0Ω

■ MEASURED FROM TRANSFORMER CENTER TAP AND R16.
● 6.3VAC ACROSS FILAMENTS.
† MEASURED FROM PIN 2 OF V7.
‡ MEASURED FROM PIN 8 OF V6.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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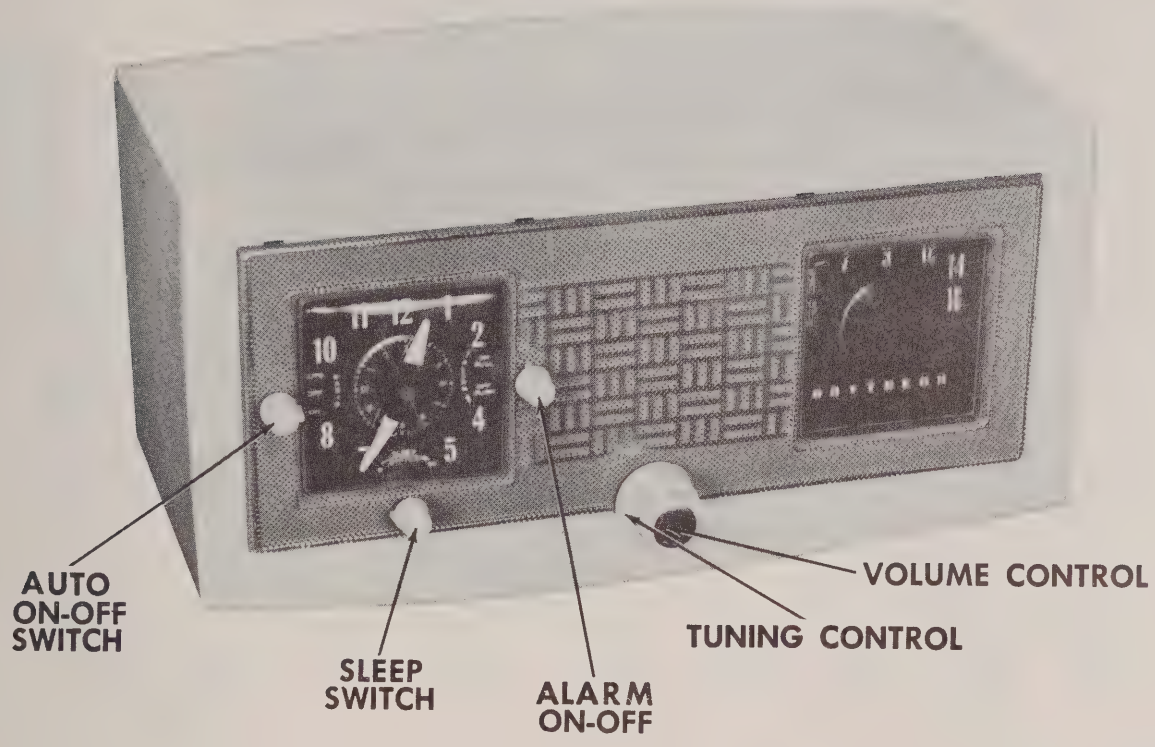
212-4

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RAYTHEON MODELS CR-41, A, CR-42, A, CR-43, A (Ch. 4D16-A)



RAYTHEON MODELS CR-41, A, CR-42, A, CR-43, A (Ch. 4D16-A)

TRADE NAME	Raytheon Model CR41, A, CR-42, A, CR-43-A (Ch. 4D16-A)
MANUFACTURER	Raytheon Tel. & Radio Corp., 5921 W. Dickens Ave., Chicago 39, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Four)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 or 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output
POWER SUPPLY	115 Volts AC-60 Cycles — RATING .27 Amp. @ 115 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy, antenna to .001MFD to reduce modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

RAYTHEON
MODEL CR41 (Ch. 4D16-A)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		RAYTHEON PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3A	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
B	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RAYTHEON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■50	150	8C-15262	AFH2-15		XB003		FP213	TVL-2432	
B	▲30	150								
C2	.05	200	8D-14460	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3A	220									
B	.005									
C	250		♦201-19303		♦PC-151		♦1408-02		♦103C5	
D										
E	.005									
C4	.01	200	8D-17258	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C5	.047	400	8J-16081	489ZX-05		PJ4S5		PT4147	4TM-S47	
C6	.18	400	8D-11111							

♦ Items C3A, C3B, C3C, C3D, C3E, R5A, R5B, R5C are combined in one unit.
When replacing items separately C3C and C3D should total 250MMF

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RAYTHEON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	10B-19797		AG-63-Z			Volume
B	Shaft		Not Req.		RS-3/16			Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RAYTHEON PART No.	IRC PART No.	
R2	47KΩ	½	9B1-82	BTS-47K	
R3	150Ω	½	9B1-52	BTS-150	
R4	2.2Meg	½	9B1-33	BTS-2.2Meg	
R5A	6.8Meg	½	♦201-19303	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RAYTHEON PART No.	IRC PART No.	
R6	150Ω	½	9B1-52	BTS-510	
R7	1200Ω	2	9B4-63	BTB-1200	
R8A	195Ω	5	9M-19778		
B	50Ω	5			
R9	220KΩ	½	9B1-27	BTS-220K	

♦ Items R5A, R5B, R5C, C3A, C3B, C3C, C3D, C3E are combined in one unit.

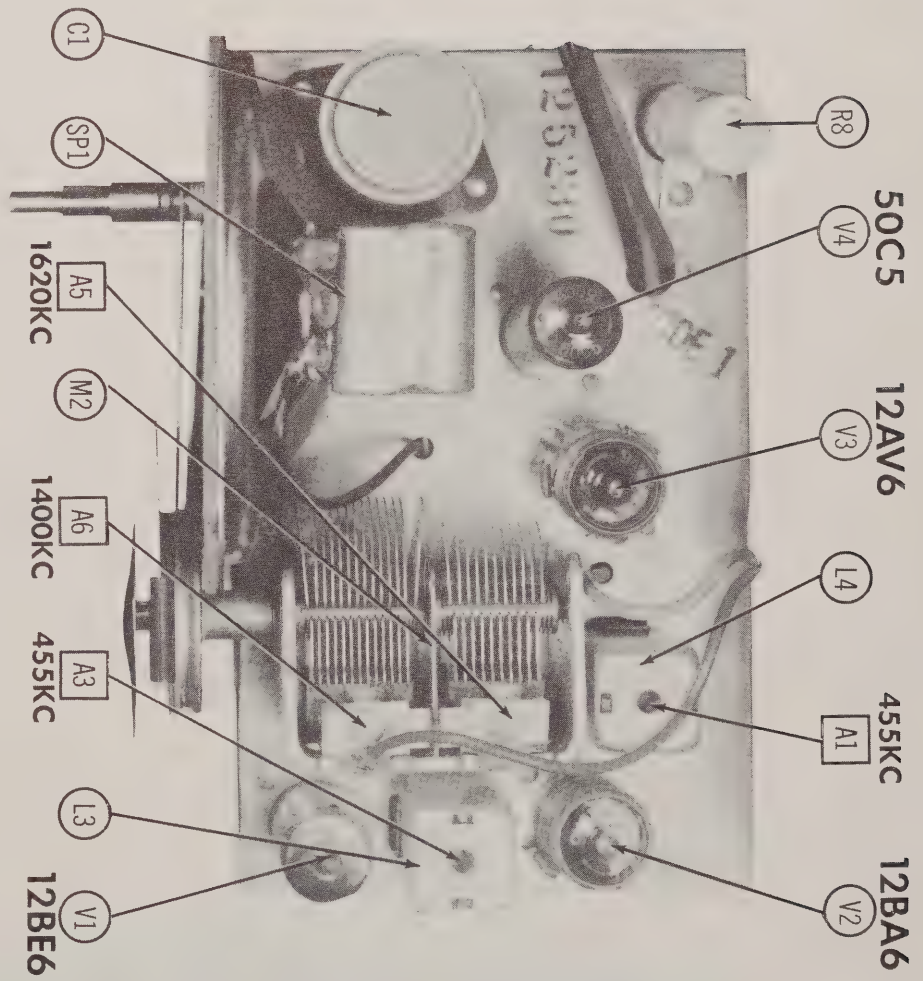
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		RAYTHEON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.1KΩ	3.2Ω	161Ω	.44Ω	B12C17595-1	A-3332	A-3025	RO-2 ①	S-2X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	RAYTHEON PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.2Ω	B18A19739		4A07 ①	① Cut edges on speaker to mount same as original

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

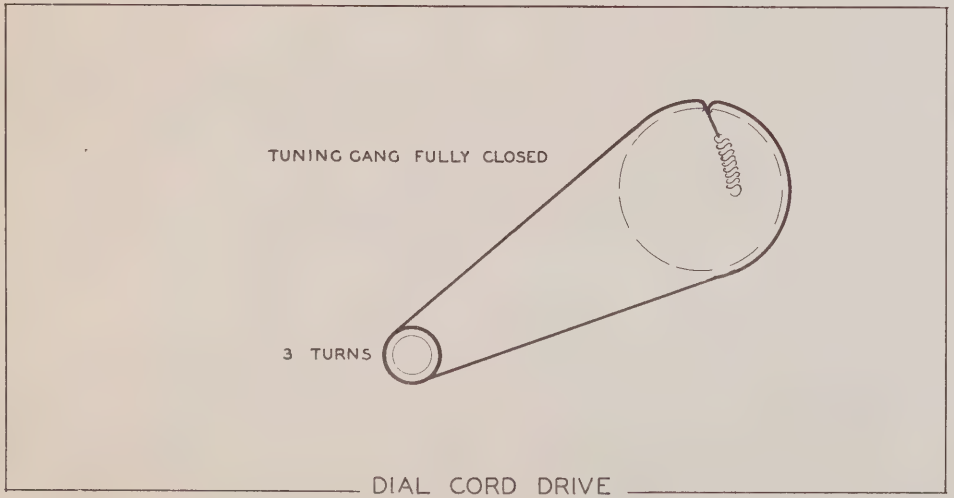
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	RAYTHEON PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	0Ω	3.4Ω	13E-20995				Includes cabinet back
L2	Osc. Coil	.8Ω	6Ω	13D-19064	14-1073			
L3	Input IF	14.5Ω	14.5Ω	13B-17731	16-6758	12-C1	BC-352	
L4	Output IF	14.5Ω	14.5Ω	13B-17731	16-6758	12-C2	BC-353	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	RAYTHEON PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.060ADC	B21J19594	NC5	5M1	1004A	6S100A	100A

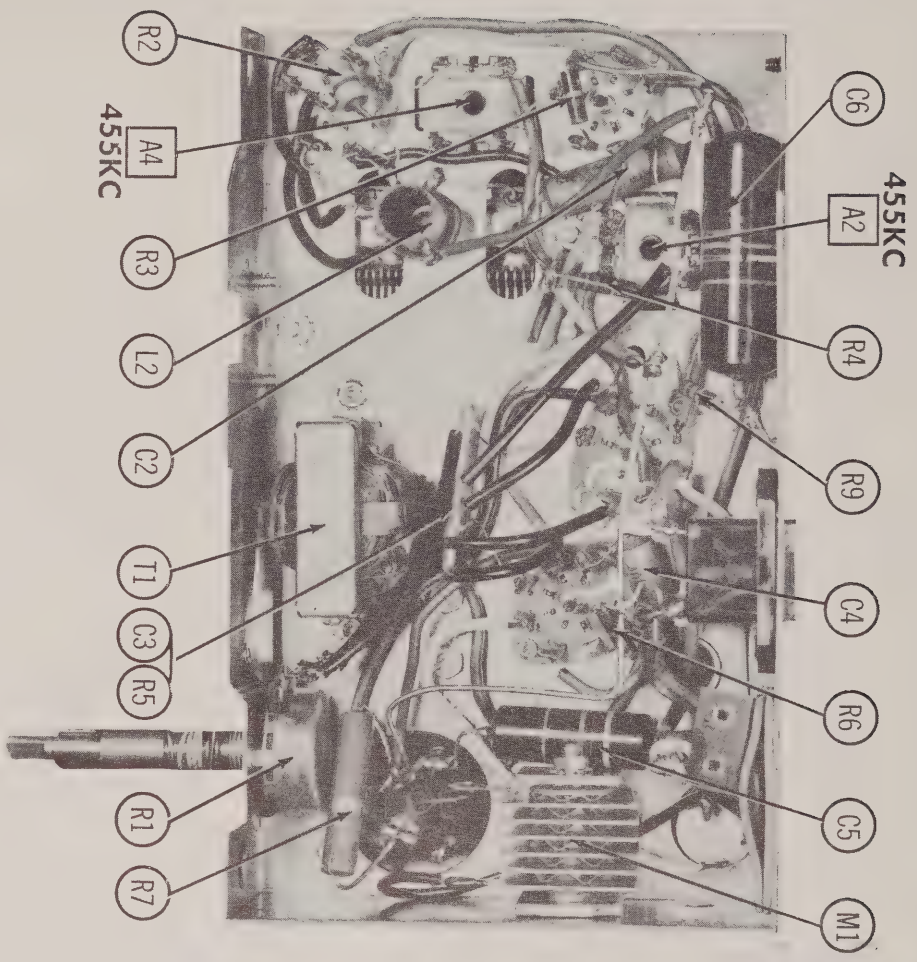
MISCELLANEOUS

ITEM No.	PART NAME	RAYTHEON PART No.	NOTES
M2	Tuning Capacitor	8A-19740	38-442MMF, 25-155MMF
	Clock Assembly	21M-20996	Model CR-41
	Clock Assembly	21M-20997	Model CR-43
	Cabinet	R5C-19734-86	Mahogany (Model CR-41A)
	Cabinet	R5C-19734-87	Ivory (Model CR-42A)
	Cabinet	5C-19734-89	Red (Model CR-43A)
	Glass (Dial)	6A-20309	
	Pointer	2G-20329	
	Scale	2C-21001	Models CR-41 and CR-42
	Scale	2C-21002	Model CR-43
	Knob	5B-19794-74	Volume (Mahogany)
	Knob	5B-19794-88	Volume (Ivory)
	Knob	85B-19794-90	Volume (Red)
	Knob	5B-19795-74	Tuning (Mahogany)
	Knob	5B-19795-88	Tuning (Ivory)
	Knob	85B-19795-90	Tuning (Red)
	Knob	5B-20711-74	Clock (Model CR-41), 3 used
	Knob	5B-20711-88	Clock (Model CR-42), 3 used
	Knob	5B-20711-91	Clock (model CR-43), 3 used
	Knob	3M-20268	Time Set

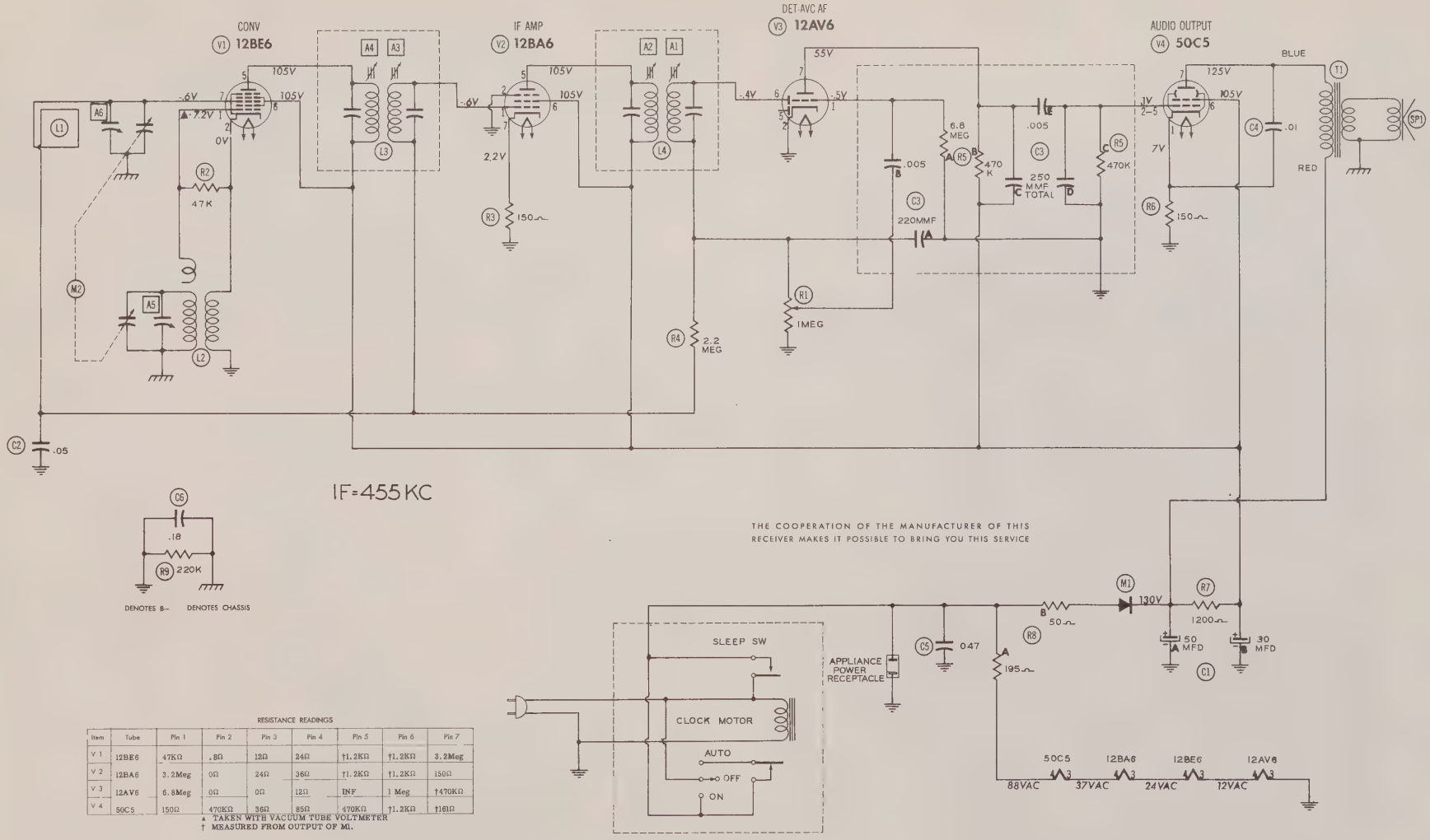


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



RAYTHEON
MODEL CR41 (Ch. 4D16-A)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	47KΩ	.8Ω	12Ω	24Ω	†1.2KΩ	†1.2KΩ	3.2Meg
V 2	12BA6	3.2Meg	0Ω	24Ω	36Ω	†1.2KΩ	†1.2KΩ	150Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	INF	1 Meg	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	85Ω	470KΩ	†1.2KΩ	†16Ω

▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM OUTPUT OF M1.

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212-5

1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- Socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

SENTINEL
MODELS 1U-343,343

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SENTINEL
MODELS 1U-343,343

SENTINEL
MODELS 1U-343,343

TRADE NAME	Sentinel Model 1U-343, 343
MANUFACTURER	Sentinel Radio Corp., 2100 W. Dempster, Evanston, Ill.
TYPE SET	AC/DC Operated AM Superhterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC/DC RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1650 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.02MFD	High side to stator plates of antenna tuning capacitor. Low side to chassis.	455KC (400∿Mod)	Tuning capacitor fully open	Across voice coil	A1, A2, A3, A4	Adjust in order given for maximum output.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"

Replace receiver in cabinet, turn tuning capacitor fully closed and set dial index marker at low frequency end of dial scale, on a level with shaft of tuning capacitor.

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PARTS LIST AND DESCRIPTIONS

SENTINEL
MODEL IU-343

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SENTINEL PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	24E24	PRS150/50-50		EDL5515		2N521	TVA-2453	Yellow
B	50	150								Red
C2	250		23E2027	SI250	D6-251	TM5T25	GP2K-251	UC-5325	5GA-T25	Note 1
C3	.05	200	23E216	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C4	250		23E2027	SI250	D6-251	TM5T25	GP2K-251	UC-5325	5GA-T25	
C5	.01	200	23E211	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C6A	.01									
B	250		♦23E2041-2		♦PC-81		♦1404-02		♦102C2	
C										
C7	.01	400	23E411	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C8	.05	600	23E416	P688-05		PTE6S5		PT615	6TM-S5	
C9	.1	400	20E407	P488-1		PTE4P1		PT401	4TM-P1	Notes 1, 2

Note 1. Not used in all Models.
Note 2. Some Models use .2MFD in this application (part #23E2021)
When replacing C9 (.1MFD) with other than orig. Mfgr. part no, rewind series coil exactly as before.
♦ Items C6A, C6B, C6C, R6A, R6B are combined in one unit.
When replacing items separately C6B and C6C should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SENTINEL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	28E27	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SENTINEL PART No.	IRC PART No.	
R2	1Meg	½	27E105	BTS-1Meg	Note
R3	22KΩ	½	27E223	BTS-22K	
R4	3.3Meg	½	27E335	BTS-3.3Meg	
R5	3.3Meg	½	27E335	BTS-3.3Meg	

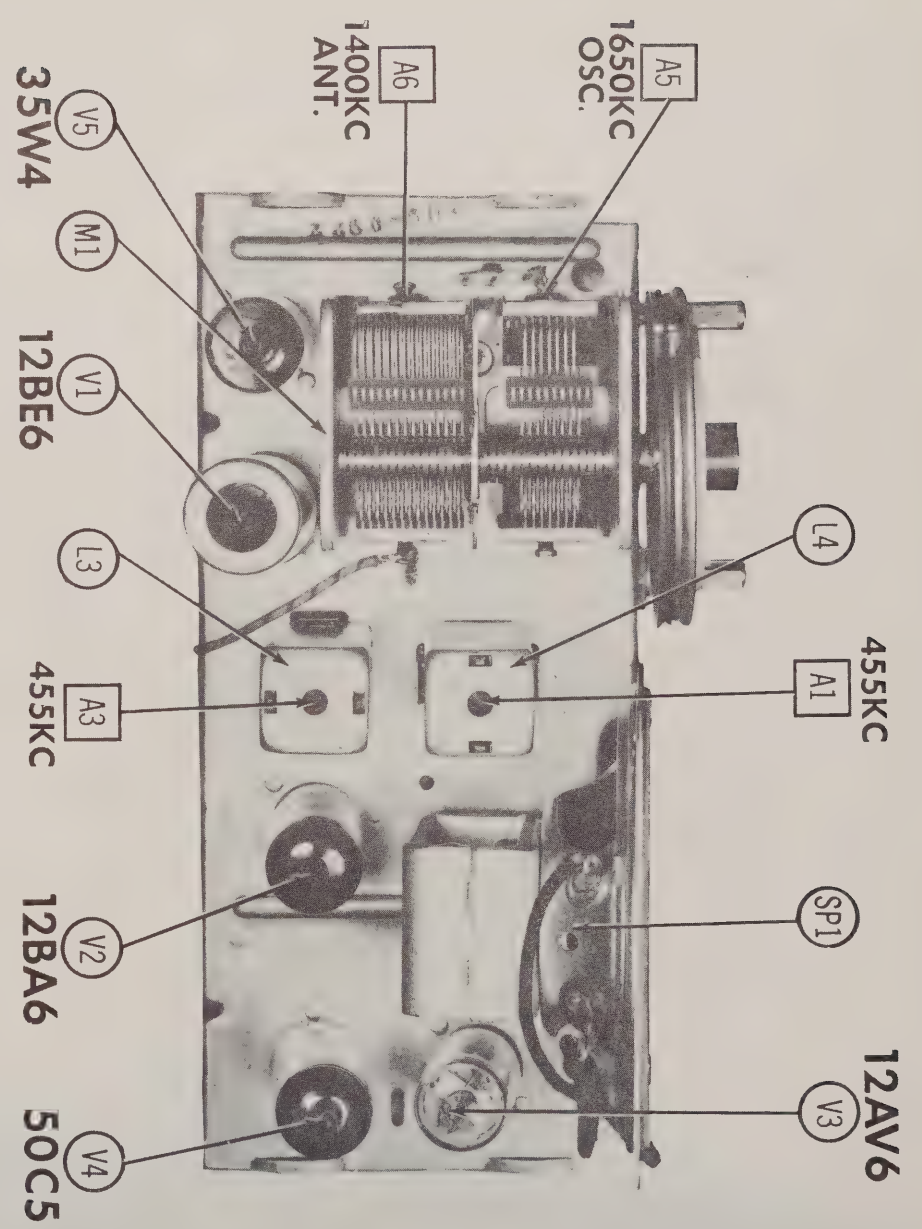
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SENTINEL PART No.	IRC PART No.	
R6A	250KΩ	½	♦23E2041-2		
B	500KΩ	½			
R7	150Ω	½	27E151	BTS-150	
R8	2200Ω	2	27E222-5	BTB-2200	

Note: Used only in Model 343.
♦ Items R6A, R6B, C6A, C6B, C6C are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		SENTINEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	3.8KΩ	3.5Ω	235Ω	.53Ω	22E49		A-2930			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SENTINEL PART No.	VIKING PART No.	QUAM PART No.	
SP1	3½"	PM	3.5Ω	1E32	35J4	3A07	

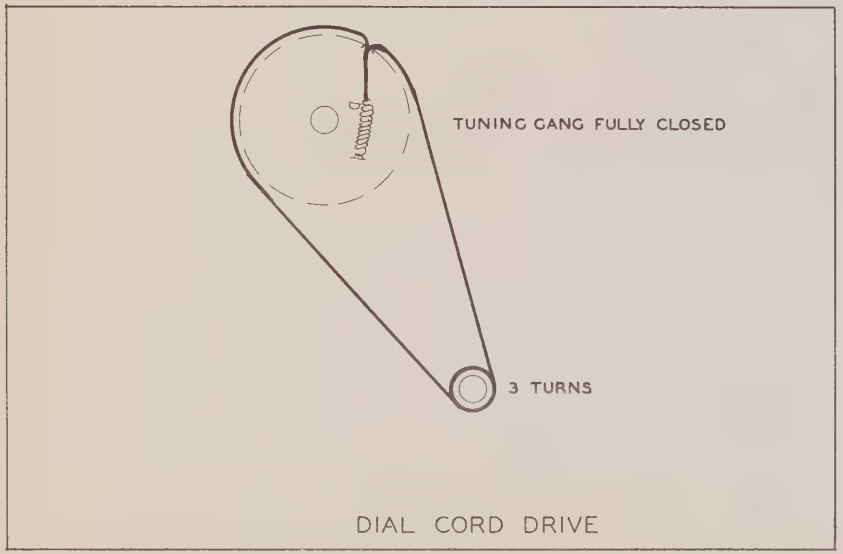
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SENTINEL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.2Ω		7E304				Includes cabinet back
L2	Osc. Coil	1.4Ω	9Ω	20E772 *				
L3	Input IF	14.5Ω	15Ω	20E732	16-6758	BC-352	12-C1	
L4	Output IF	14.5Ω	15Ω	20E732	16-6758	BC-353	12-C2	

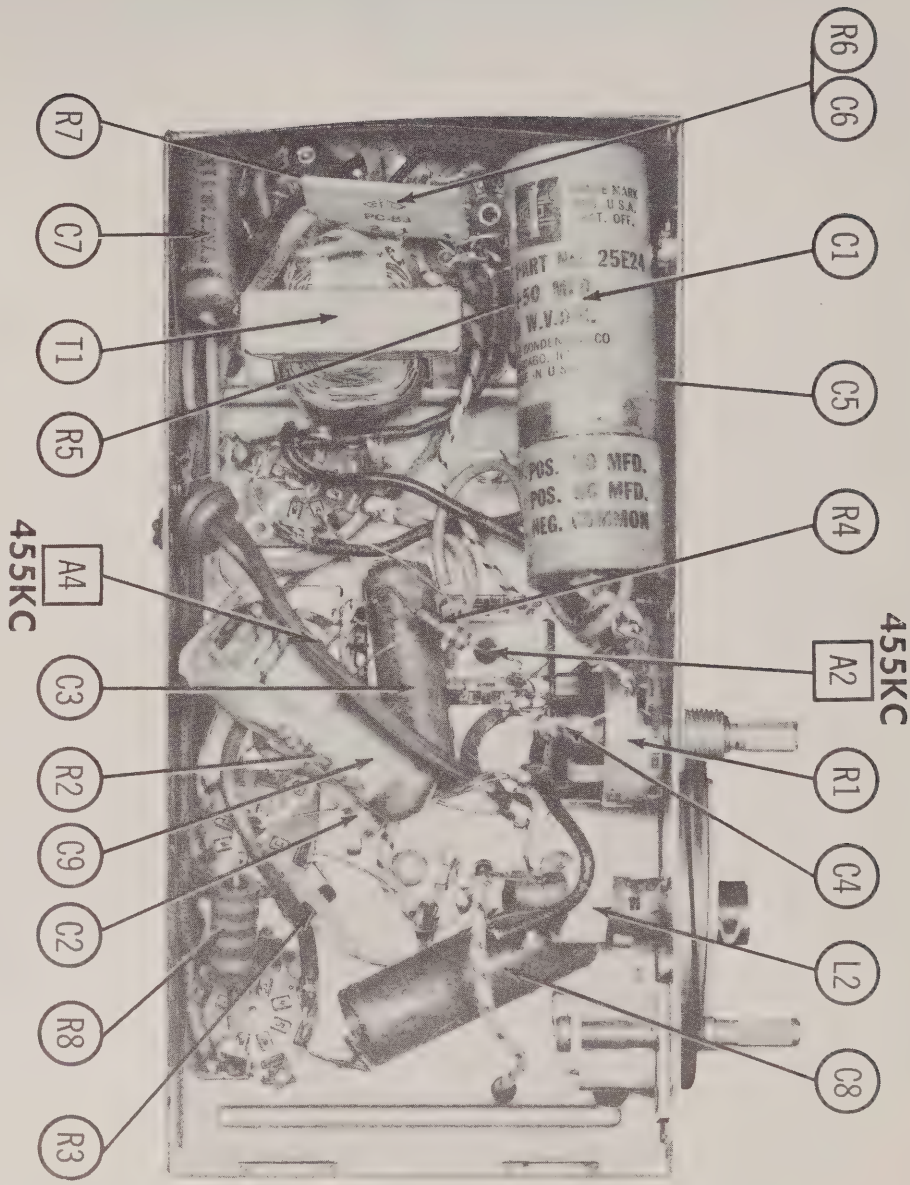
* Part No. applies to Model 1U343 only. Model 343 use Part No. 20E767 in this application.

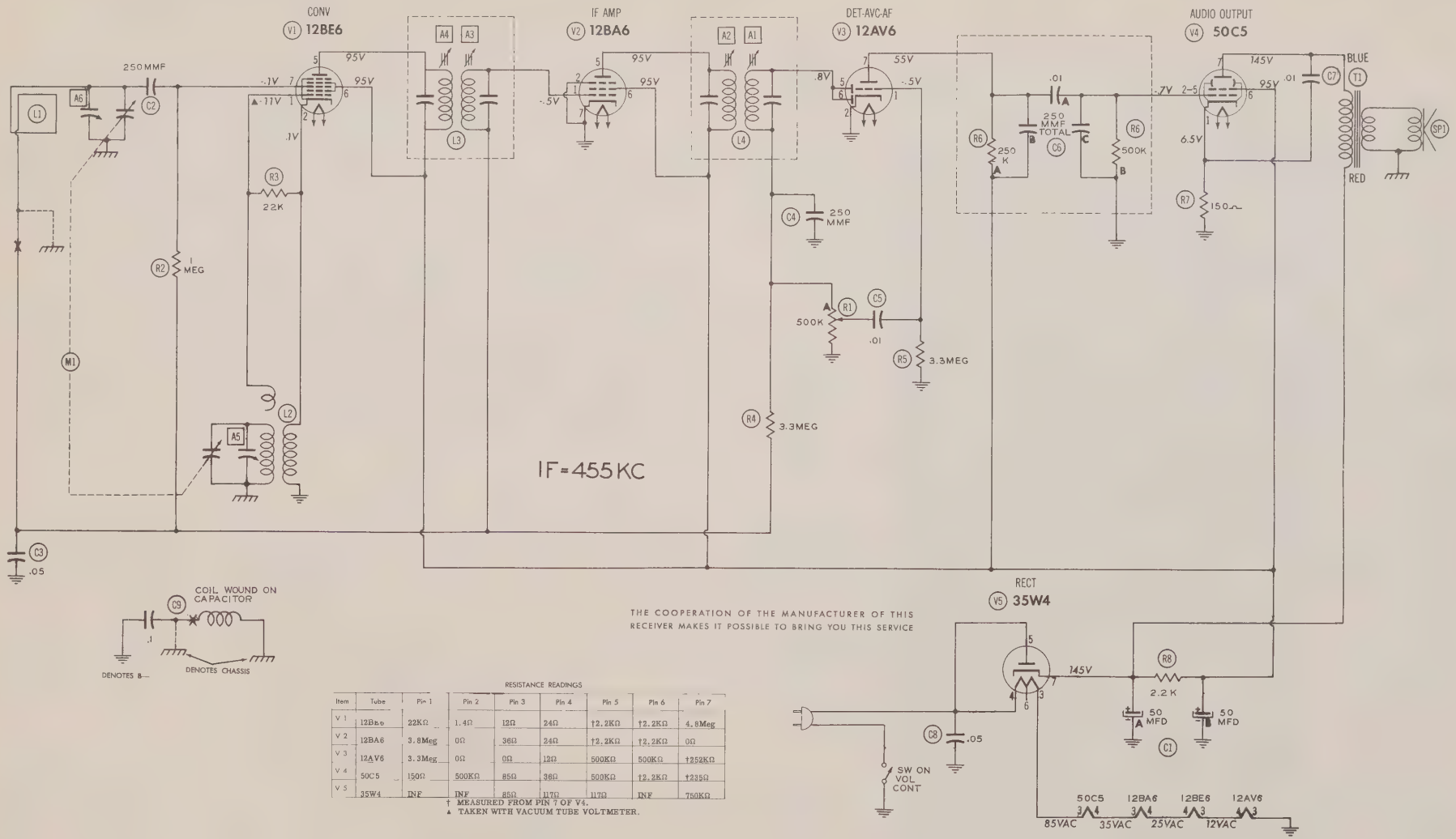
MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
M1	Tuning Capacitor	24E45	40-472MMF, 21-145MMF
	Cabinet	7E302-2	Walnut
	Cabinet	7E302-3	Ivory
	Cabinet	7E302-4	Red
	Pointer	35E31-2	For Walnut Cabinet
	Pointer	35E31-3	For Ivory Cabinet
	Pointer	35E31-4	For Red Cabinet
	Knob	37E75	Off/On Volume, Tuning (2 Used) for walnut cabinet
	Knob	37E75-2	Off/On Volume, Tuning (2 Used) for ivory and red cabinet



CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12Be6	22KΩ	1.4Ω	12Ω	24Ω	†2.2KΩ	†2.2KΩ	4.8Meg
V 2	12BA6	3.8Meg	0Ω	36Ω	24Ω	†2.2KΩ	†2.2KΩ	0Ω
V 3	12AV6	3.3Meg	0Ω	0Ω	12Ω	500KΩ	500KΩ	†252KΩ
V 4	50C5	150Ω	500KΩ	85Ω	36Ω	500KΩ	†2.2KΩ	†235Ω
V 5	35W4	INF	INF	85Ω	117Ω	117Ω	INF	750KΩ

† MEASURED FROM PIN 7 OF V4.
▲ TAKEN WITH VACUUM TUBE VOLTMETER.

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1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- Socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

SILVERTONE MODELS 2110A, 2111, 2115B, 2150B, 2160, 2162 (Ch. 528.631, -1, Ch. 528.632, -1, -2, -3, -4, -5, Ch. 528.632 A, -1, -2, -3, -5)

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MODEL 2110A

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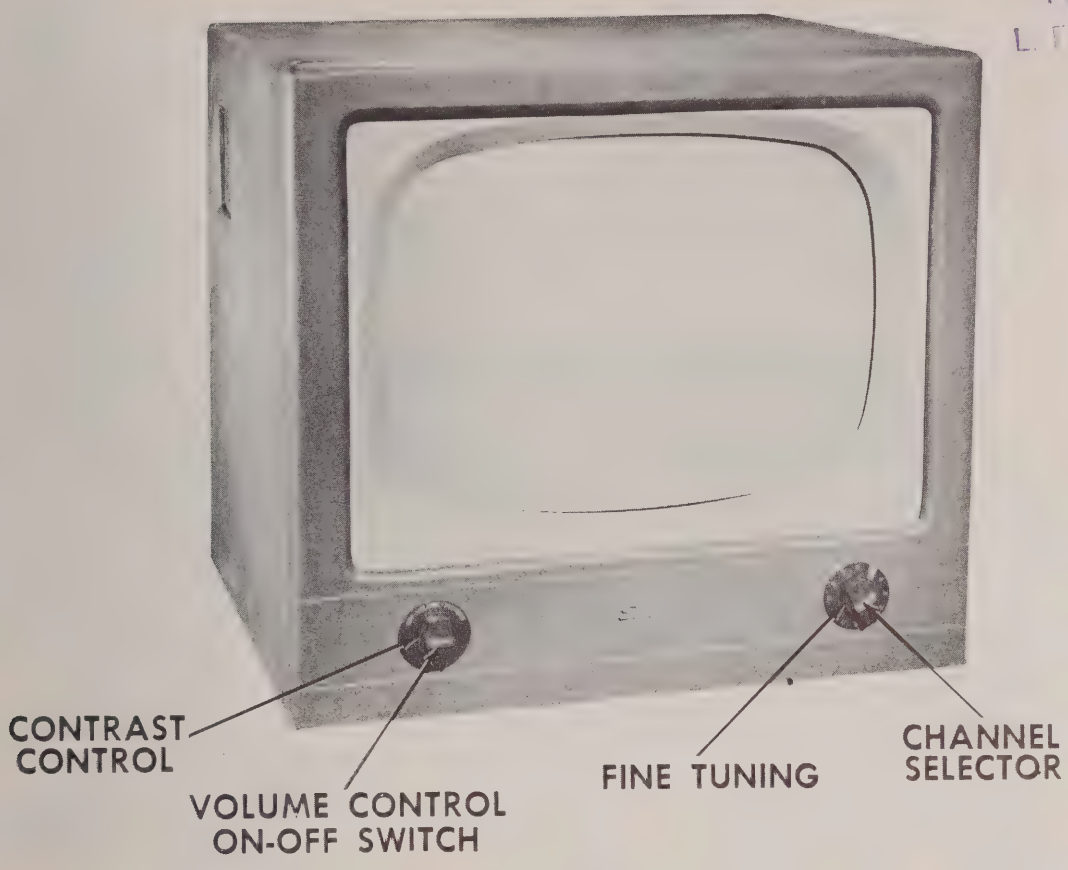

SILVERTONE MODEL 2110 A (Ch. 528.632-4)

TRADE NAME	Silvertone Models 2110A, 2111, 2115B, 2150B, 2160, 2162 (Ch. 528.631, -1, Ch. 528.632, -1, -2, -3, -4, -5, Ch. 528.632A, -1, -2, -3, -5).
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Illinois
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.76 Amp @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13, Video IF 26.25MC, Sound IF 21.75MC (Intercarrier)

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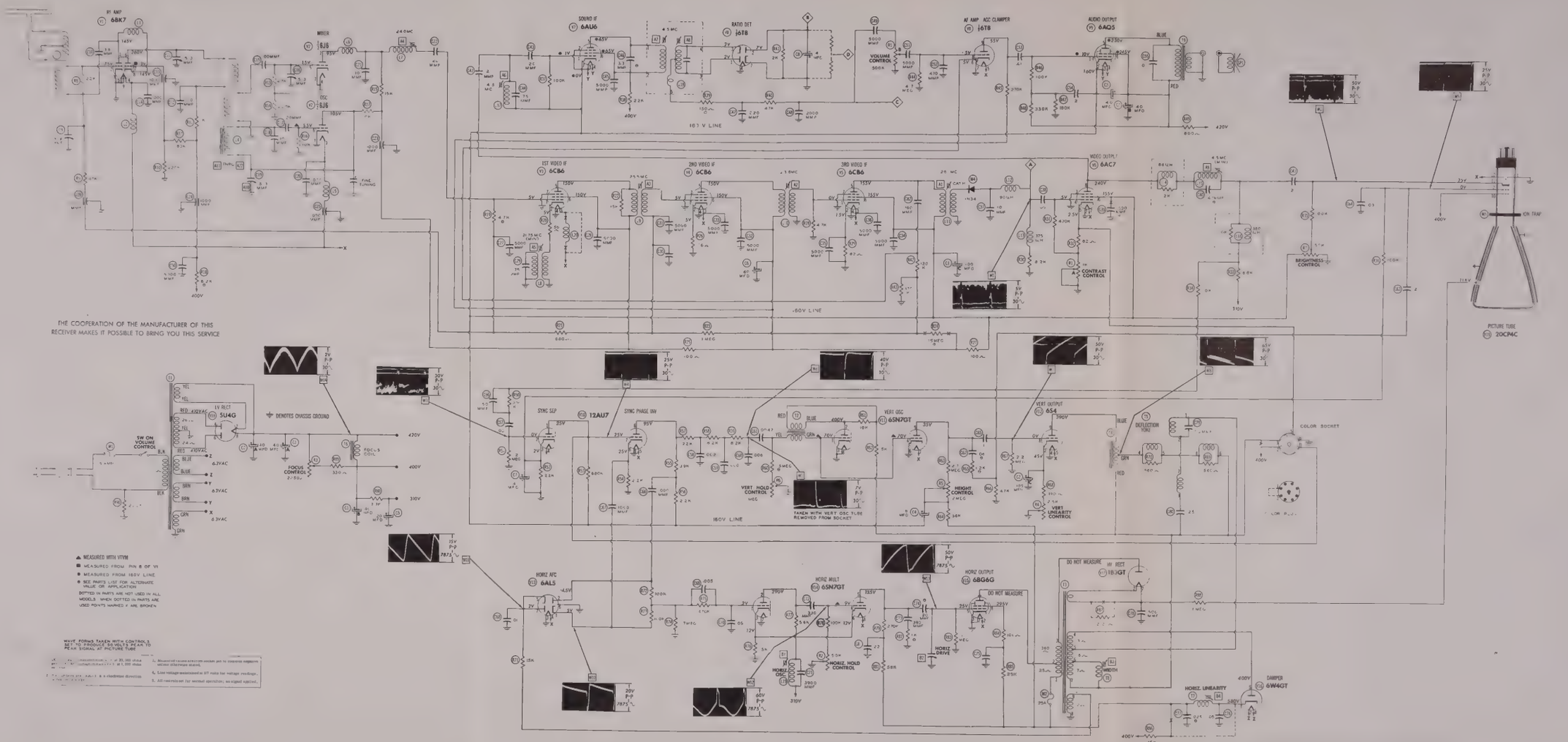
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DENOTES CHASSIS GROUND
MEASURED WITH VTVM
MEASURED FROM PIN 8 OF V1
MEASURED FROM 160V LINE
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
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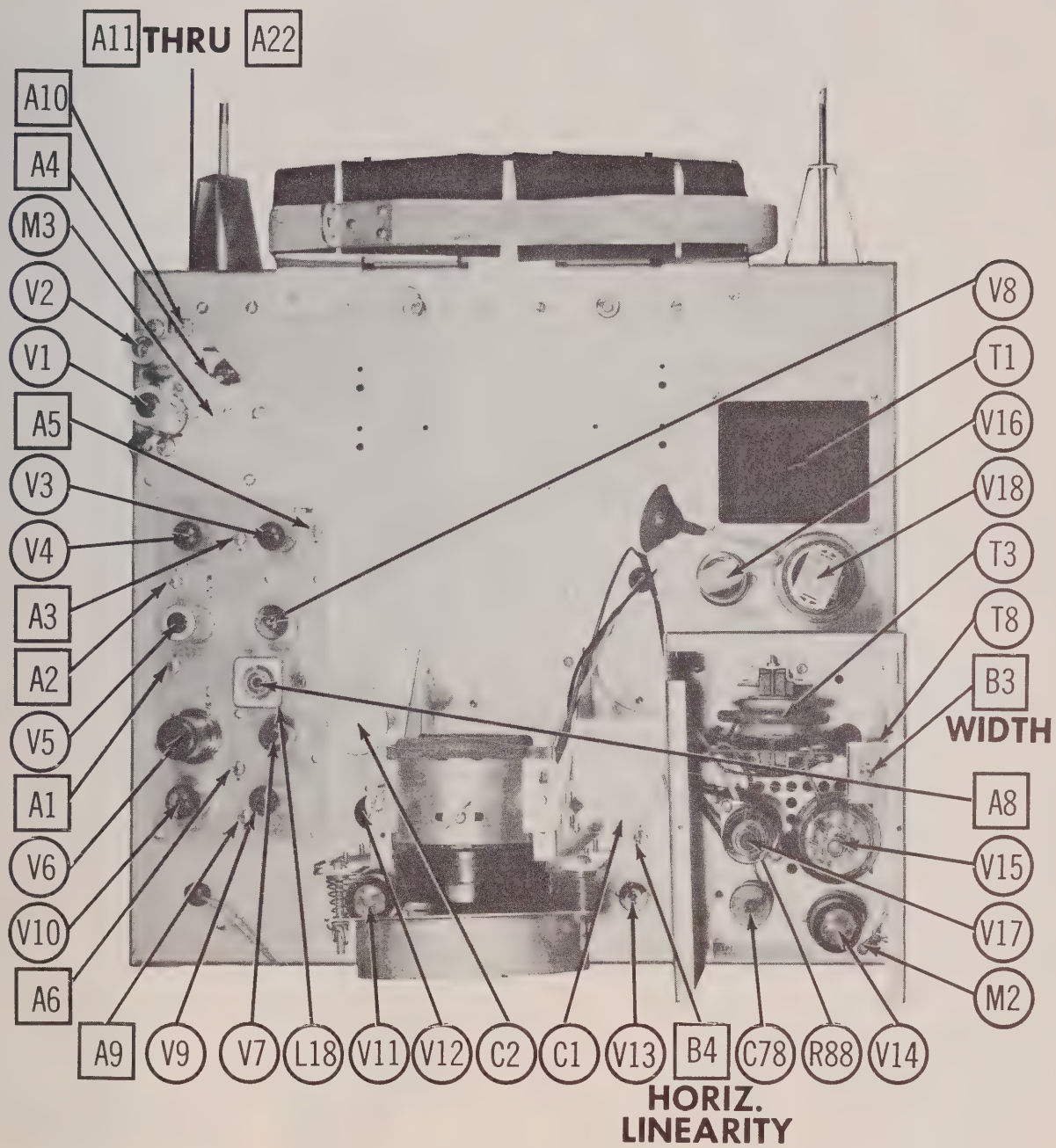
SILVERTONE MODELS 2110A, 2111, 2115B, 2150B, 2160, 2162 (Ch. 528.631, -1, Ch. 528.632, -1, -2, -3, -4, -5, Ch. 528.632-A, -1, -2, -3, -5)

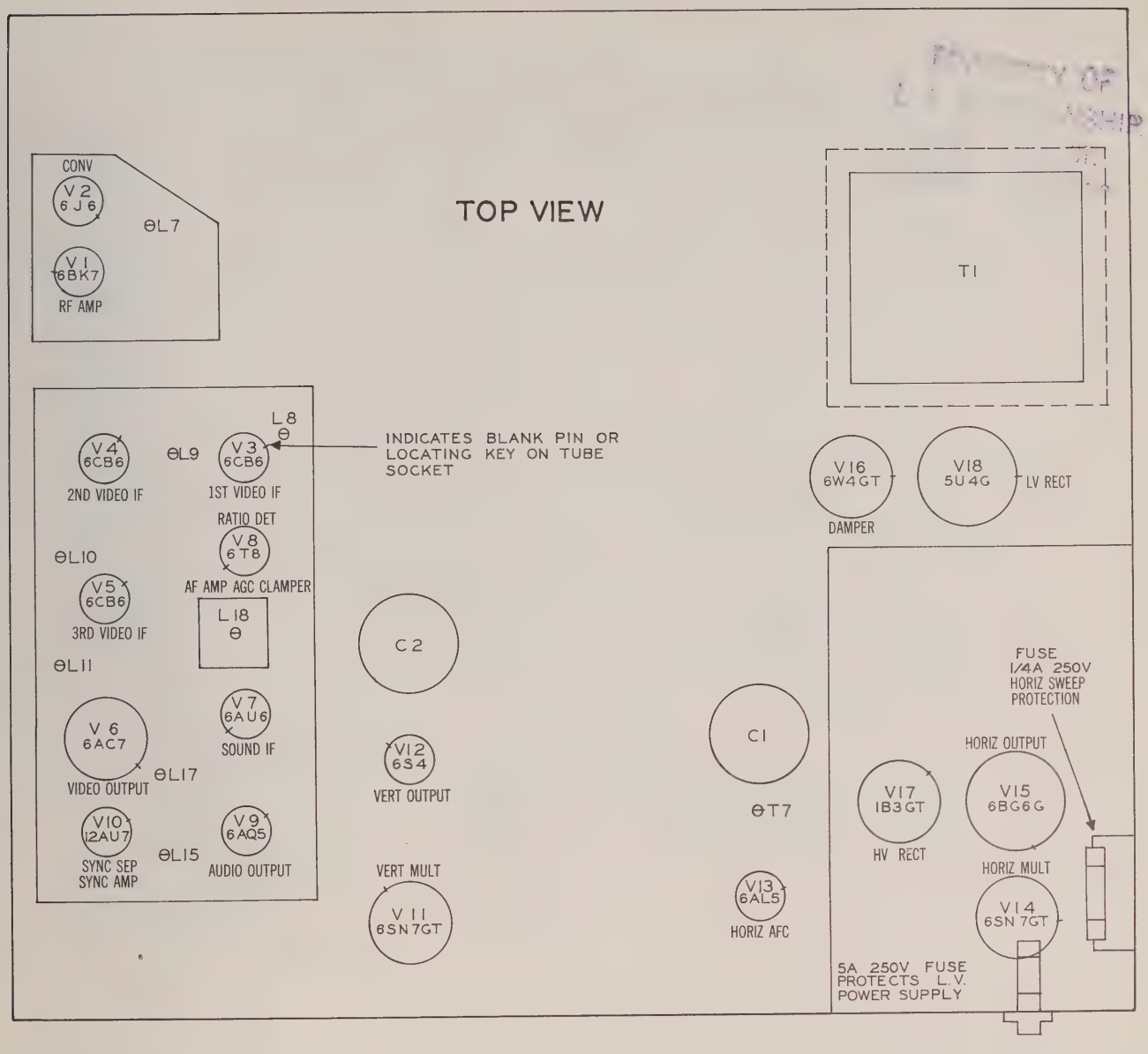


CHASSIS TOP VIEW

SILVERTONE MODELS 2110A, 2111, 2115B, 2150B, 2160, 2162 (Ch. 528.631, -1, Ch. 528.632, -1, -2, -3, -4, -5, Ch. 528.632A, -1, -2, -3, -5)

CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V18 Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V9
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V19
Has pic, no sound - V7, V8, V9

SYNC FAILURE
No vert. sync - V10, V11
No horiz. sync - V10, V13, V14
No vert. or horiz. sync - V10

SWEEP FAILURE
No raster, has sound - V14, V15, V16, V17, V19, Fuse (M2)
No vertical deflection - V11, V12
Poor vert. linearity or foldover - V11, V12
Poor horiz. linearity or foldover - V14, V15, V16
Narrow picture - V14, V15, V16, V17, V18
Vert. off freq. - V10, V11
Horiz. off freq. - V10, V13, V14

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis.
Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C30. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	26.1MC (Unmod)	Any	DC probe to point (A) Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	23.8MC	"	"	A2	"
3.	"	"	25.5MC	"	"	A3	"
4.	"	"	24.0MC	"	"	A4	"
5.	"	"	21.75MC	"	"	A5	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.75MC 26.25MC	Any	Vert. amp to point (A) Low side to chassis.		Check for response curve similar to Fig. 1. If necessary retouch A1 thru A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B) Common to chassis.	A6, A7	Adjust for maximum deflection.
8.	"	"	"	"	DC probe to point (C) Common to point (D)	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to point (A) Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp to point (B) Low side to chassis.	A6, A7	Disconnect stabilizer capacitor C8. Adjust for curve of maximum amplitude and symmetry as in Fig. 2. .
8.	"	"	"	"	"	Vert. amp to point (C) Low side to chassis.	A8	Reconnect capacitor C8. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector to pin 11 of picture tube. Common to chassis.	A9	Adjust for MINIMUM deflection.

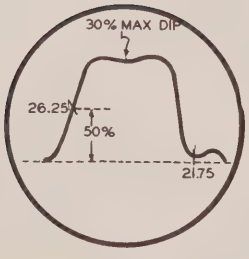


FIG.1

FIG.2

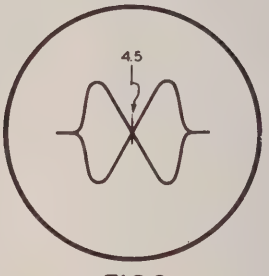


FIG.3

ALIGNMENT INSTRUCTIONS (CONT.)

PROPERTY OF
L. F. MANSHIP
3924 ST.
DENVER COLORADO

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the bias battery as under Video IF Alignment.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A10. It should be noted that this is an all channel oscillator circuit adjustment, and should not be used to correct any individual channel.
If adjustment of A10 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency.
The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp to point (A) Low side to chassis.	A11	Adjust to place video marker at 50% on high frequency slope of IF response curve as in Fig. 5.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A12	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A13	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A14	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A15	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A16	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A17	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A18	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A19	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A20	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A21	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A22	

RF ALIGNMENT

The RF and Mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

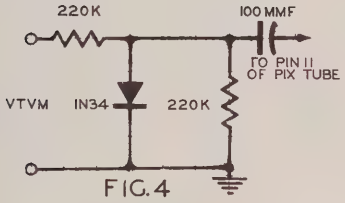


FIG.4

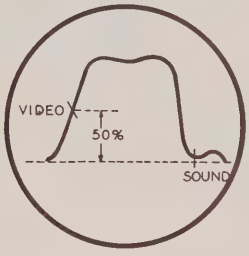
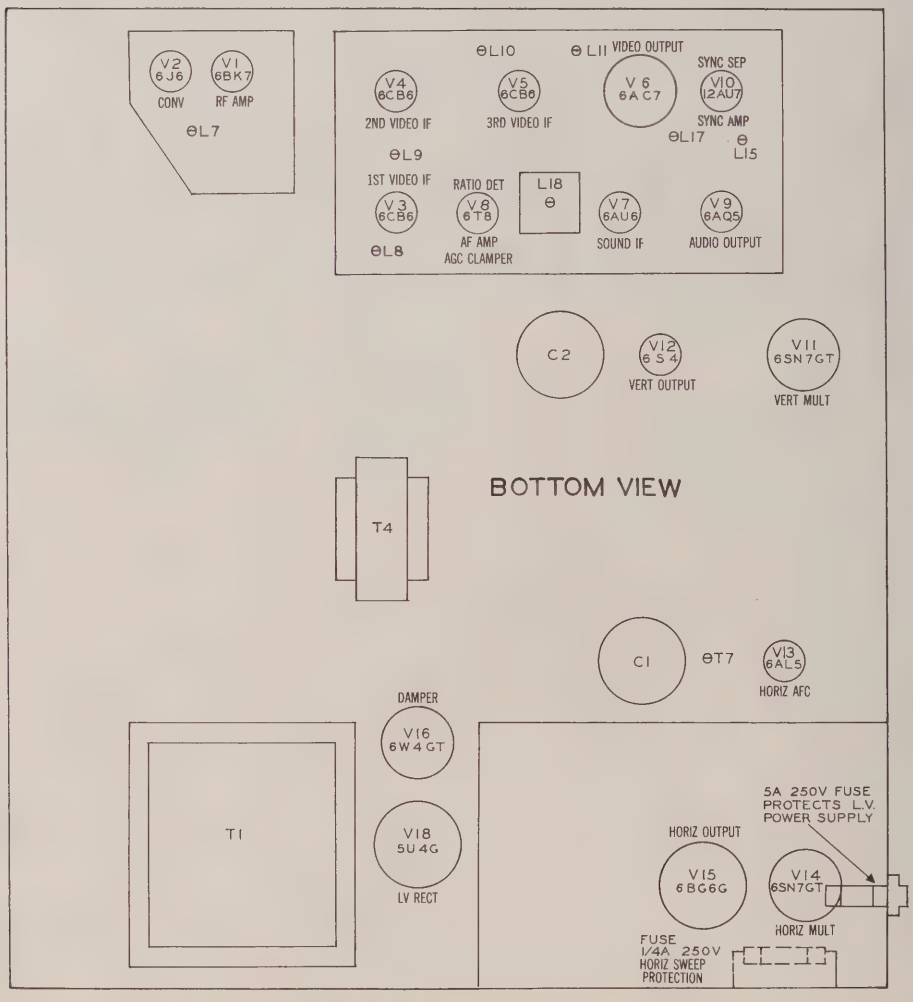


FIG.5

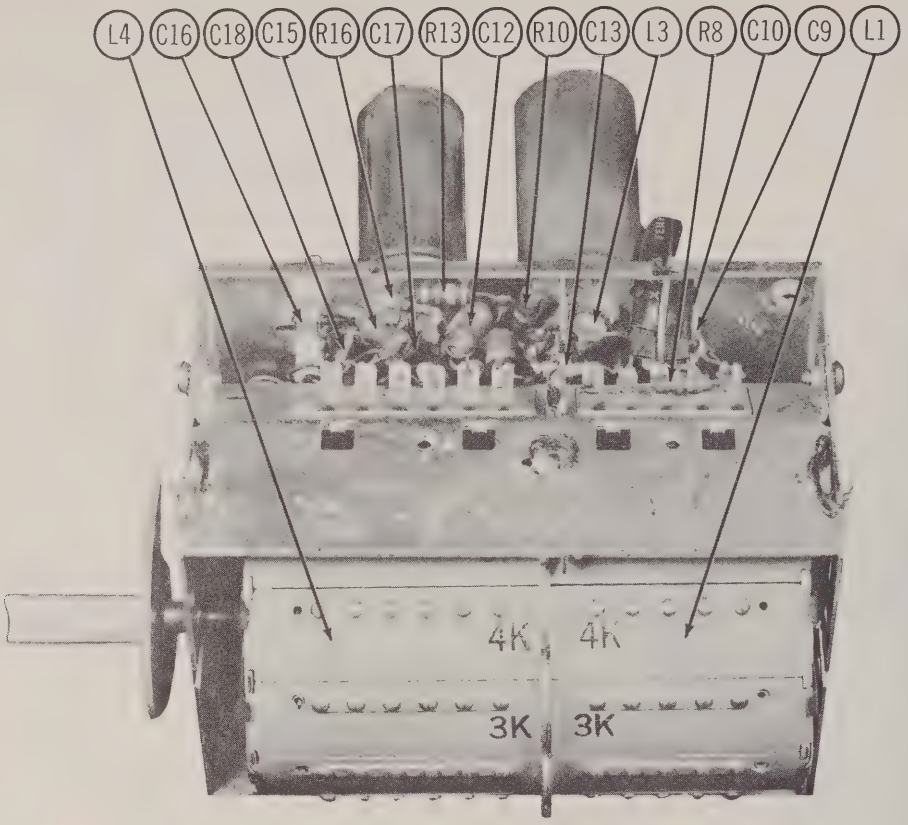
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7	INF	1.5Meg	0Ω	.1Ω	0Ω	†9.6KΩ	130KΩ	INF	0Ω
V 2	6J6	#10KΩ	#15KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6CB6	1.5Meg	56Ω	0Ω	.1Ω	#200Ω	#200Ω	0Ω		
V 4	6CB6	1.4Meg	56Ω	0Ω	.1Ω	#100Ω	#100Ω	0Ω		
V 5	6CB6	.2Ω	82Ω	0Ω	.1Ω	#0Ω	#0Ω	0Ω		
V 6	6AC7	0Ω	0Ω	0Ω	470KΩ	210Ω	#0Ω	.1Ω	†10KΩ	
V 7	6AU6	#100KΩ	#0Ω	#0Ω	#0Ω	†22KΩ	†22KΩ	#0Ω		
V 8	6T8	INF	12KΩ	INF	0Ω	.1Ω	590KΩ	0Ω	4.7Meg	#270KΩ
V 9	6AQ5	240KΩ	40KΩ	#0Ω	#0Ω	†1KΩ	†800Ω	240KΩ		
V 10	12AU7	#750KΩ	1.2Meg	22KΩ	.1Ω	.1Ω	#6.5KΩ	#750KΩ	2.2KΩ	0Ω
V 11	6SN7GT	1.9Meg	▲35KΩ	0Ω	1.9Meg	▲4Meg	0Ω	.1Ω	0Ω	
V 12	6S4	INF	600Ω	INF	0Ω	.1Ω	2.2Meg	INF	INF	†1.5KΩ
V 13	6AL5	4.8Meg	4.8Meg	0Ω	.1Ω	15KΩ	0Ω	15KΩ		
V 14	6SN7GT	5.1Meg	†18KΩ	1.5KΩ	140KΩ	†40KΩ	1.5KΩ	0Ω	.1Ω	
V 15	6BG6G	▲25KΩ	.1Ω	0Ω	▲25KΩ	1 Meg	INF	0Ω	▲25KΩ	Top Cap ▲62Ω
V 16	6W4GT	INF	INF	100KΩ	†350Ω	†390Ω	INF	INF	INF	
V 17	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ▲422Ω
V 18	5U4G	INF	150KΩ	INF	26Ω	INF	24Ω	INF	150KΩ	
V 19	20CP4C	0Ω	122KΩ	Pin 10 ▲18KΩ	Pin 11 110KΩ	Pin 12 .1Ω				

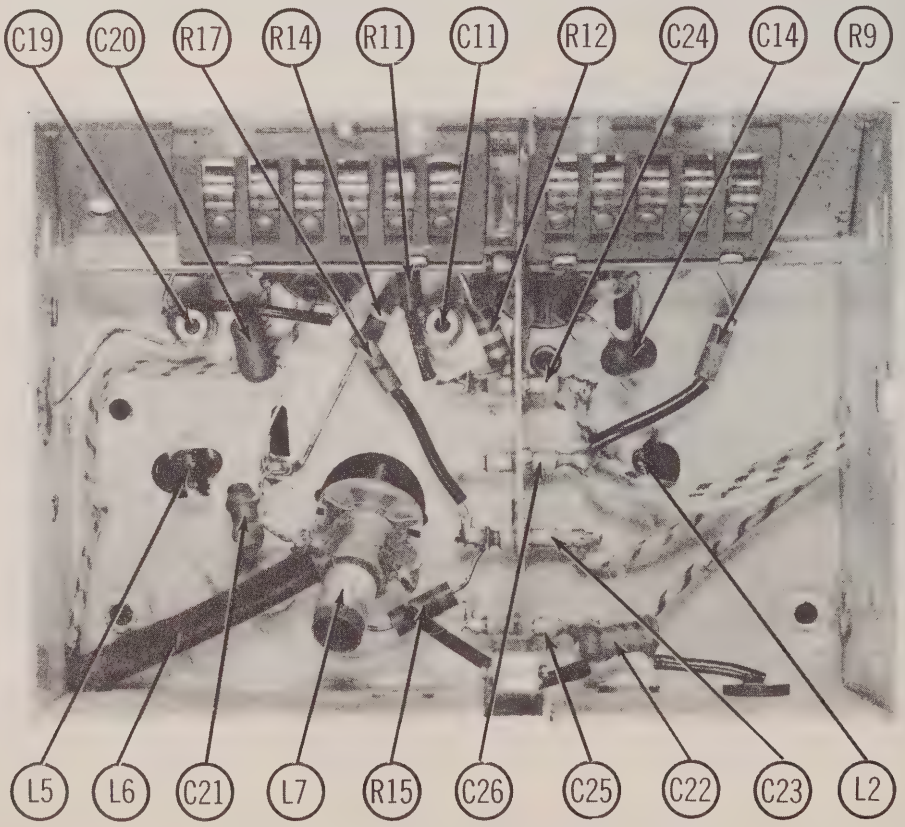
† MEASURED FROM PIN 8 OF V18.
# MEASURED FROM PIN 2 OF V9.
▲ MEASURED FROM PIN 3 OF V16.



TUBE PLACEMENT CHART

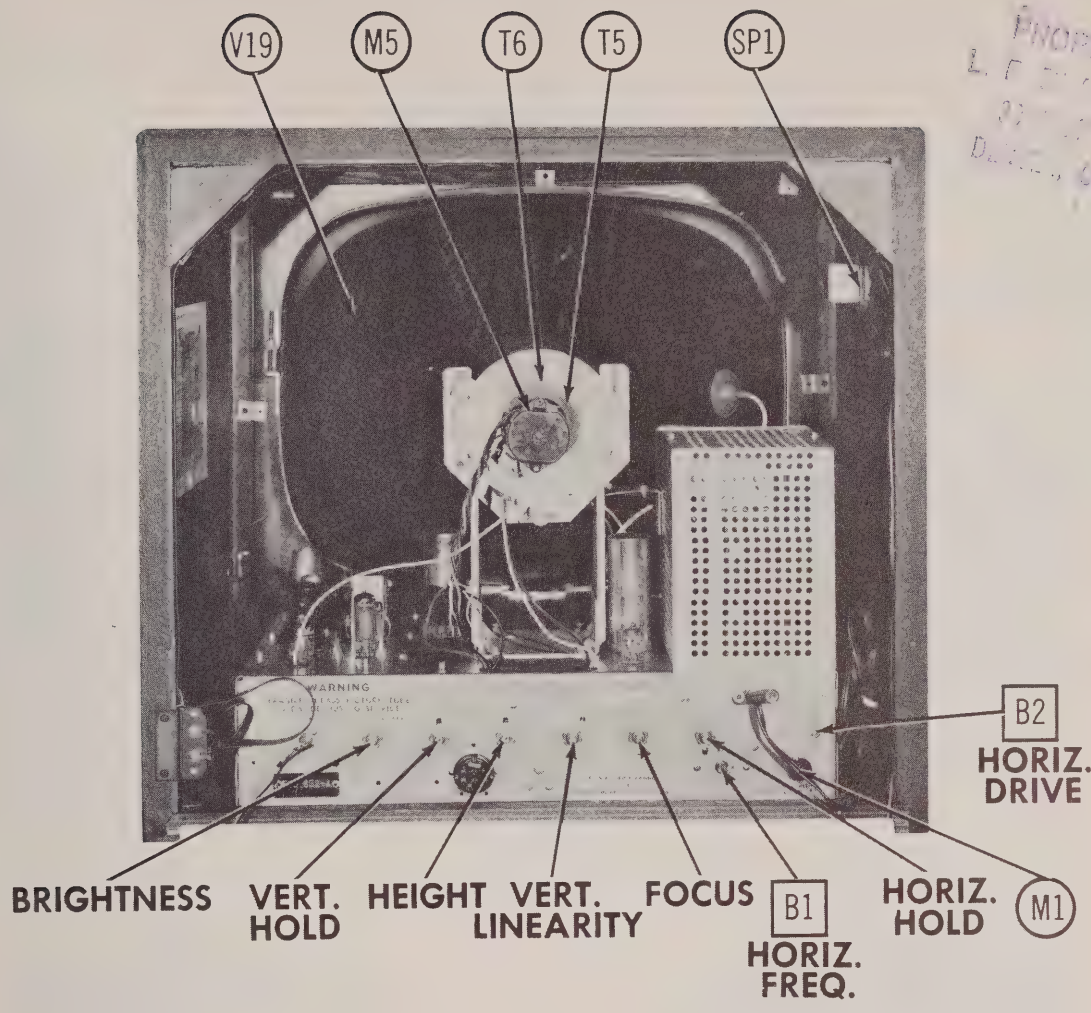


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PROPERTY OF
L. C. [illegible] SHIP
[illegible] ST.
[illegible] COLORADO



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at the center of its range and adjust the horizontal oscillator slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) counter clockwise as far as possible without the presence of vertical white lines or compression of the center of the picture.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

See "LOSS OF HIGH VOLTAGE".

INSUFFICIENT SWEEP

Substitute V14, V15, V16 and V18. Check waveform at W13.

If Satisfactory	If Unsatisfactory
Check C76, C77, C75, R84, R85, T7, T8, T3 and other components associated with the horizontal output stage. Check yoke.	Check setting of horizontal drive trimmer (B2). Check C73, C74 and other components associated with V14 and V15.

DRIVE LINES

Substitute V15, V16 and V14. Check setting of horizontal drive trimmer (B2). Check C76, C77, C73, C74, T3 and other components associated with the horizontal output stage . Check horizontal deflection yoke.

COMPRESSED LEFT SIDE

Substitute V15, V16 and V14. Check adjustment of horizontal linearity (B4) and width (B3). Proceed as outlined under "INSUFFICIENT SWEEP".

FOLDS

Substitute V16, V15 and V14. Proceed as outlined under "DRIVE LINES".

XMAS TREE EFFECT

Substitute V14. Check L19 for shorted turns. Check C71 for open on leaky.

VERTICAL

LOSS OF SWEEP

Substitute V11 and V12. Check waveform at W7.

If Satisfactory	If Unsatisfactory
Check T4, yoke and other components associated with V12.	Check C65, R62, T2 and other components associated with V11.

INSUFFICIENT SWEEP

Substitute V11 and V12. Check waveform at W7.

If Satisfactory	If Unsatisfactory
Check C2C , R68, R4 and other components associated with V12. Check yoke R69 and R70.	Check C62 and C65. Check R62 and other compoents associated with V11.

COMPRESSED AT BOTTOM

Substitute V11 and V12. Check C2C, T4, yoke and other components associated with V11 and V12.

COMPRESSED AT TOP

Substitute V11 and V12. Check C62, C63, T4, yoke and other associated components.

FOLDS

Substitute V11 and V12. Check R63, R64, R5, C62, C63, T4, yoke and other components associated with V11 and V12.

FAST VERT FREQ. (Fig. 1)

Check C61 for leakage.

EXCESSIVE HEIGHT WITH POOR LINEARITY

Check C65 for leakage.

EXPANDED TOP COMPRESSED BOTTOM (Fig. 2)

Check C62 for open.

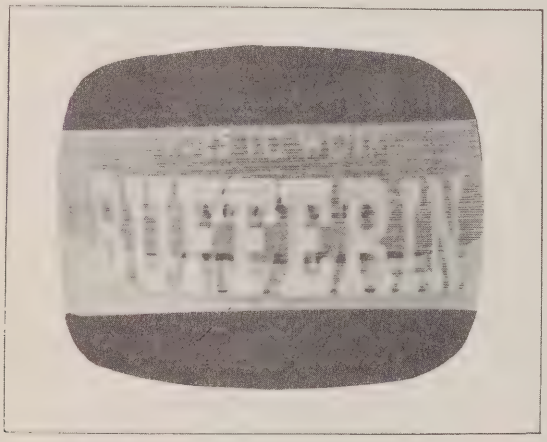


Fig. 1. FAST VERTICAL FREQUENCY
SEE VERTICAL SWEEP

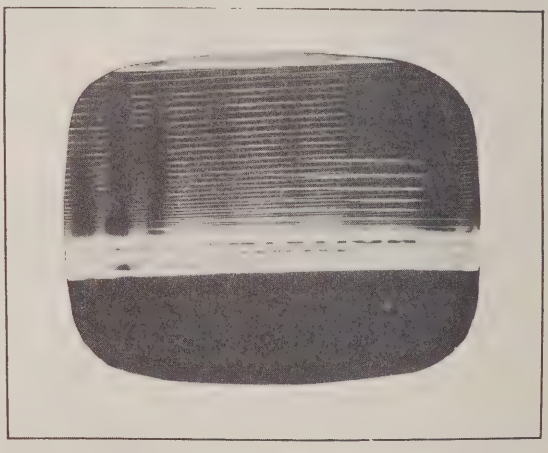


Fig. 2. EXPANDED TOP COMPRESSED BOTTOM
SEE VERTICAL SWEEP

SYNC

HORIZONTAL

LOSS OF SYNC

Substitute V13 and V14. Check C68, C66, C67 and other components associated with V13 and V14.

CRITICAL SYNC

Substitute V13 and V14. Check C66, C67, C68, C69, C70, C72 and other components associated with V13 and V14.

PULLING PICTURE

Substitute V10, V13 and V14. Check C69, C70 and other associated components.

VERTICAL

LOSS OF SYNC

Substitute V11. Check C58, C59, C60, C61, T2 and other associated components.

CRITICAL SYNC

Substitute V11 and V10. Proceed as outlined under "LOSS OF SYNC".

TRIGGERING

Substitute V10, V11, V12 and V13. Check circuit near these stages for filament lead dress.

CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Silvertone PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1A	RF Amplifier	6BK7	6BK7	9AJ	
B	RF Amplifier	6BZ7	6BZ7	9AJ	
C	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Vid eo IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	6AC7	6AC7	8N	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector-AF Amplifier-AGC Clamper	6T8	6T8	8E	
V9	Audio Output	6AQ5	6AQ5	7BZ	
V10	Sync Separator-Sync Phase Inv.	12AU7	12AU7	9A	
V11	Vert. Osc.	6SN7GT	6SN7GT	8BD	
V12	Vert. Output	6S4	6S4	9AC	
V13	Horiz. AFC	6AL5	6AL5	6BT	
V14	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	6BG6G	6BG6G	5BT	
V16	Damper	6W4GT	6W4GT	4CG	
V17	HV Rectifier	1B3GT	1B3GT	3C	
V18	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Silvertone PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V19A	20CP4C	20CP4 20CP4A ① 20DP4 ④ 20DP4A ①② 20HP4 ③ ⑤ 20HP4A ① ② 20LP4 ① ④	I2D I2D I2D I2D I2C I2C I2D	① Circuit changes necessary ② 3/8" longer
B	20CP4B		I2D	
C	20CP4F		I2D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	±40	450	T18-295	AFH3-159		C118		FP375	TVL-3764	
B	±40	450								
C	±100	200								
C2A	±40	450	T18-295	AFH3-159		C118		FP375	TVL-3764	
B	±40	450								
C	±100	200								
C3	40	250	T18-299	PRS250/40		BR4025A		TC58	TVA-151L	
C4	8	500	T18-288	PRS500/8		BR850A		TC82	TVA-1902	
C5	20	450	T18-276	PRS450/20		BR2045A		TC75	TVA-1709	
C6	30	200	T18-302	PRS250/30-30		BR5025		3N525	TVA-1813	
C7	4	50	T18-292	PRS150/4		BR415		TC30	TVA-1402	
C8	4	50	T18-292	PRS150/4		BR415		TC30	TVA-1402	
C9	3-9				829-10					
C10	3.6			SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C11	.5-3				829-3			CT565		
C12	120			SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C13	1000			CN-1-001	MFT-1000				503C-D1	
C14	1000			SI1000	D6-102	TM5D1	801-001	DC-521	5HK-D1	
C15	100			SI100	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	
C16	.5-3				829-3			CT565A		
C17	30			SI20NP0	TCC-20		NP0K-200	ZT-542	5TCC-Q2	
C18	10			SI10NT50	TCN-10		NT50K-100	NT-541	5TCU-Q1	
C19	.5-3				829-3			CT565A		
C20	1000			SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C21	10			SI10NT50	TCN-10		NT50K-100	NT-541	5TCU-Q1	
C22	120			SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C23	1000			CN-1-001	MFT-1000				503C-D1	
C24	1000			CN-1-001	MFT-1000				503C-D1	
C25	1000			CN-1-001	MFT-1000				503C-D1	
C26	1000			CN-1-001	MFT-1000				503C-D1	
C27	5000		T16-177	BPD-005	MD-502	TM5D5	SU-005	DC-525	5HK-D5	
C28	5000		T16-177	BPD-005	MD-502	TM5D5	SU-005	DC-525	5HK-D5	
C29	75	500		1469-000075					MCB230	
C30	2	400	T18-188	484-2		PTE4P22		TP429	4TM-P22	
C31	5000		T16-177	BPD-005	MD-502	TM5D5	SU-005	DC-525	5HK-D5	
C32	5000		T16-177	BPD-005	MD-502	TM5D5	SU-005	DC-525	5HK-D5	
C34	5000		T16-177	BPD-005	MD-502	TM5D5	SU-005	DC-525	5HK-D5	
C36	5000		T16-177	BPD-005	MD-502	TM5D5	SU-005	DC-525	5HK-D5	
C37	5000		T16-177	BPD-005	MD-502	TM5D5	SU-005	DC-525	5HK-D5	
C38	.05	400	T16-189	SI20NP0	TCP-20		NP0K-100	ZT-541	5TCC-Q1	
C39	5000		T16-177	P488-05	DF-503	PTE4S5		PT415	4TM-S5	Note 1
C40	47			BPD-0001	MD-502	TM5D5	SU-005	DC-525	5HK-D5	Note 2
C41	.2	600	T16-212	SH473P0	TCZ-47		NP0K-470	ZT-5447	5TCC-Q47	Note 2
C42	2			484-2		PTE8P25		PT819	6TM-P25	
C43	120			SI120	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C44	75			SI75NT50	TCN-75		NT50L-750	ZT-5475	5TCU-Q75	
C45	5000		T16-177	BPD-005	MD-502	TM5D5	SU-005	DC-525	5HK-D5	
C46	3.3		T18-338	SD3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	Note 3
C47	220	500	T15-230	1468-00025	D6-221	5W5T25	GP2K-221		1FM-325	
C48	2000		T15-228	BPD-002	DD-202	TM5D2	801-002	DC-522	5HK-D2	
C49	5000		T16-177	BPD-005	MD-502	TM5D5	SU-005	DC-525	5HK-D5	
C50	5000		T16-177	BPD-005	MD-502	TM5D5	SU-005	DC-525	5HK-D5	
C51	5000		T16-177	BPD-005	MD-502	TM5D5	SU-005	DC-525	5HK-D5	
C52	470	500	T15-200	1468-00005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C53	.01	600	T15-201	P488-01	D6-103	PTE8S1	GP2-333-103	PT611	6TM-S1	
C54	.2	400	T15-186	484-2		PTE4P22		TP429	4TM-P22	
C55	.01	600	T16-201	P488-01	D6-103	PTE8S1	GP2-333-103	PT611	6TM-S1	
C56	150	500	T15-235	1468-00015	D6-151	5W5T15	GP2K-151	MC236	1FM-315	

PARTS LIST AND DESCRIPTIONS (CONT.)

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C57	.05	400	T16-189	P488-05	DF-503	PTE8S5		PT615	6TM-S5	
C58	.002	600	T16-198	P488-002	D6-202	PTE8D2	GP2-333-202	PT622	6TM-D2	
C59	.006	600	T16-209	P488-003		PTE8D6	GP2-333-602	PT626	6TM-D6	
C60	.006	600	T16-209	P488-006		PTE8D6	GP2-333-602	PT626	6TM-D6	
C61	.0047	600	T16-220	P488-0047	D6-472	PTE8D47	GP2-333-472	PT6247	6TM-D47	
C62	.03	600	T16-230	P488-03		PTE8S6		PT616	6TM-S6	Note 4
C63	.2	400	T16-188	484-2		PTE4P22		TP429	4TM-P22	
C64	.02	600	T16-218	P488-02		PTE8S3		PT613	6TM-S3	
C65	.1	300	T16-206	P488-1	DF-104	PTE6P1		PT601	6TM-P1	
C66	1000		T15-220	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C67	1000		T15-220	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C68	.01	600	T16-201	P488-01	D6-103	PTE8S1	GP2-333-103	PT611	6TM-S1	
C69	.005	600	T16-190	P488-005	D6-502	PTE8D5	GP2-333-502	PT625	6TM-D5	
C70	.05	600	T16-193	P488-05	DF-503	PTE8S5		PT615	6TM-S5	
C71	3900	500		1464-004		1DR5D4		MCB463	MS-34	
C72	330	500	T15-226							
C73	390	500	T15-231	1469-00004		5R5T4		MCB243	MS-34	
C74	120		T15-232							Note 5
C75	.1	600	T16-208	P488-1	DF-104	PTE6P1		PT601	6TM-P1	
C76	.05	1000	T15-212	P1088-05		PTE10S5		PT1815	MB-55	
C77	.025	1000	T15-222	P1088-025		PTE10S25				Note 6
C78	500	20000	T15-234	HV20C	TV3-502	MM-C20T5	413-501	HV-20035	20DK-T5	
C79	50	800	T15-233							
C80	.25	400	T16-217	P488-25		PTE4P25		PT4025	4TM-P25	
C81	.22	600	T15-218	P686-22		PTE6P25		PT6025	6TM-P25	
C82	100		T15-190	BPD-0001	D6-101	TM5T1	GP1K-101	UC-531	5GA-T1	

Note 1. Not used in Ch. 528.632, 528.632-1, 528.632A, 528.632A-1, 528.632-2, 528.632A-2.
Note 2. Some chassis use 120MMF in this application.
Note 3. 5MMF used in Ch. 528.632, 528.632-1, 528.632A, 528.632A-1, 528.632-2, 528.632A-2 (part #T15-222)
Note 4. .05MFD used in Ch. 528.632, 528.632-1, 528.632A, 528.632A-1 (part #T16-229)
Note 5. 180MMF used in Ch. 528.632, 528.632-1, 528.632A, 528.632A-1 (part #T15-236)
390MMF used in Ch. 528.631 (part #T15-231)
Note 6. .02MFD used in Ch. 528.631 (part #T16-219)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1000Ω	½	T24-197	QJ-362*				Contrast-Panel
B	500K	½						Volume & Switch-Rear
R2A	50KΩ	½	T25-10	Q11-123	AG-44-S	AB-31	SU-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R2A
R3A	2250Ω	2	T25-14	WA-2500	A43-2500		R3500L	Focus-Wire Wound
B	Shaft		Not Req.	Not Req.	FK3-1/4		Not Req.	Attach to R2A
R4A	2500Ω	½	T25-13	Q11-113	AG-15-S	AB-7	SU-8	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R4A
R5A	2 Meg	½	T25-15	Q11-139	AG-83-S	AB-75	SU-56	Height
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R5A
R6A	1 Meg	½	T25-17	Q11-137	AG-16-S	AB-59	SU-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R6A
R7A	50KΩ	½	T25-10	Q11-123	AG-44-S	AB-31	SU-35	Brightness
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R7A

* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS 5 SHAFTS B11-108 & P1-400 (Panel)
B13-133 & R2-420 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	NOTES
R8	22KΩ	½		BTS-23K	
R9	47KΩ	½		BTS-47K	
R10	220KΩ-5%	½			
R11	100Ω	½		BTS-1000	
R12	180KΩ-5%	½			
R13	4700Ω	½		B TS-4700	
R14	220KΩ	½		BTS-220K	
R15	15KΩ	½			
R16	10KΩ	½		BTS-10K	
R17	10KΩ	½		BTS-10K	
R18	8200Ω	2		BTS-8200	
R19	4700Ω	½	T60-759	BTS-4700	Note 4
R20	5MΩ	½	T60-806	BTS-5M	
R21	680Ω	½	T60-708	BTS-680	
R22	15KΩ	½	T60-783		
R23	1 Meg	½	T60-668	BTS-1 Meg	
R24	15Meg	½	T60-684	BTS-15Meg	Note 3
R25	100Ω	½	T60-752	BTS-100	
R26	5MΩ	½	T60-806	BTS-5M	
R27	100Ω	½	T60-752	BTS-100	
R28	4700Ω	½	T60-759	BTS-4700	
R29	82Ω	½	T60-776	BTS-82	
R30	8200Ω-5%	½	T60-778	BTS-8200-5%	
R31	470KΩ	½	T60-731	BTS-470K	
R32	82Ω	½	T60-776	BTS-82	
R33	6800Ω	2	T60-808	BTS-6800	
R34	10KΩ	½	T60-760	BTS-10K	
R35	100KΩ	½	T60-801	BTS-100K	
R36	100KΩ	½	T60-801	BTS-100K	
R37	100KΩ	½	T60-801	BTS-100K	
R38	22KΩ	2	T60-806	BTS-22K	
R39	150Ω	½	T60-787	BTS-150	
R40	47KΩ	½	T60-730	BTS-47K	
R41	120KΩ	½	T60-813	BTS-12K	
R42	120KΩ	½	T60-817	BTS-120K	
R43	470KΩ	½	T60-731	BTS-470K	
R44	4.7Meg	½	T60-779	BTS-4.7Meg	
R45	270KΩ	½	T60-747	BTS-270K	
R46	100KΩ	½	T60-801	BTS-100K	
R47	180KΩ-5%	½	T60-788	BTS-180K-5%	
R48	330KΩ-5%	½	T60-787	BTS-330K-5%	
R49	900Ω	5	T60-800	3 3/4A-800	

Note 1. Chassis No. 528.631 uses a 4700Ω resistor in this application.
Note 2. Chassis No. 528.631 uses a 47Ω (Ω) watt) resistor in this application.
Note 3. Not used in chassis No. 528.631.
Note 4. Chassis No. 520.632 & 528.632A use a 1.2Meg resistor in this application.
Note 5. Chassis No. 528.632 & 528.632A use a 4700 Ω resistor in this application.
Note 6. Not used in all models.

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	NOTES
R50	270KΩ	½	T60-747	BTS-270K	
R51	1.2Meg	½	T60-783	BTS-1.2Meg	
R52	22KΩ	½	T60-744	BTS-22K	
R53	680KΩ	½	T60-807	BTS-680K	
R54	2200Ω	½	T60-714	BTS-2200	
R55	3900Ω	½	T60-710	BTS-3900	
R56	2200Ω	½	T60-714	BTS-2200	
R57	22KΩ	½	T60-744	BTS-22K	
R58	8200Ω	½	T60-778	BTS-8200	
R59	8200Ω	½	T60-778	BTS-8200	
R60	1.5Meg	½	T60-880	BTS-1.5Meg	
R61	10KΩ	½	T60-760	BTS-10K	
R62	15KΩ	½	T60-783	BTS-15K	
R63	2.7Meg	½	T60-872	BTS-2.7Meg	
R64	56KΩ	½	T60-802	BTS-56K	
R65	1200Ω	½	T60-756	BTS-1200	Note 5
R66	4700Ω	½	T60-759	BTS-4700	
R67	2.2Meg	½	T60-726	BTS-2.2Meg	
R68	390Ω	½	T60-665	BTS-390	
R69	560Ω	½	T60-758	BTS-560	
R70	560Ω	½	T60-758	BTS-560	
R71	15KΩ	1	T60-716	BTA-15K	
R72	100KΩ	½	T60-801	BTS-100K	
R73	100KΩ	½	T60-801	BTS-100K	
R74	4.7Meg	½	T60-779	BTS-4.7Meg	
R75	470KΩ	½	T60-731	BTS-470K	
R76	1500Ω	½	T60-729	BTS-1500	
R77	560Ω	½		BTS-560	
R78	100KΩ	½	T60-801	BTS-100K	
R79	270KΩ	½	T60-747	BTS-270K	
R80	330Ω	2	T60-816	BTS-3300	
R81	56KΩ	½	T60-802	BTS-56K	
R82	900Ω	½	T60-703	BTS-1000	Note 1
R83	1 Meg	½	T60-668	BTS-1 Meg	
R84	100Ω	½	T60-752		
R85	25KΩ	10	T60-853	1 3/4A-25K	
R86	15KΩ	5	T60-804	1 3/4A-15K	Note 2
R87	5Ω	½	T60-881		Note 6
R88	1 Meg	½	T60-877	BTS-1000	
R89	330Ω	2	T60-816	BTS-330	
R90	220KΩ	½	T60-867	BTS-270K	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: Silvertone PART No.	STANCOR PART No	MERIT PART No.	CHICAGO PART No	TRIAD PART No	RCA TYPE No.
T1	117VAC @1.78A	820VCT @1.75ADC	5VAC @ 2A SEC. 4 6.3VAC @1.2A	2½ .75A SEC. 5 6.3VAC @6.3A	B60-264					

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: Silvertone PART No.	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	RCA TYPE No.	NOTES
T2	170	940Ω	T80-257	A-8125 ①	A-3093 ①	TBO-5 ①	A-97X ①	208T2 ⑭	Vert. Osc. Trans.
T3	385Ω tap ⑤	9.70 tap ⑥ .7Ω, 6.7Ω	T80-265Q T80-263 ③	A-8126	AVO-10 ③	TFB-8 ⑥ ⑤	D-14 ④ ⑦		Horiz. Output Trans.
	25.2	SEC. 2 2							
		SEC. 3 0.							
T4	1050Ω tap ⑤ 12Ω		T80-261	A-8123	A-3037	TSO-8	A-102X	222T1	Vert. Output Trans.
T5A	13Ω								
B	58Ω		T83-694	DY-8A ⑧	MDF-70 ⑧	TY-2 ⑤	Y-12	206D1 ⑫	Horiz. Deflection Coils
T6	420Ω		T10-560	FC-11	MF-2	TC-20 ⑫	A-970-R		Vert. Deflection Coils
T7	370		T10-561	WC-5 ⑪ ⑮	TWL-1 ⑮	WC-11 ⑮	A-970-R		Focus Coil
									Horiz. Linearity Coil
T8	.8Ω		T10-551	WC-1	TW-1			20IR1	Width Coil

① Drill one new mounting hole.
② Alternate horiz. output trans.
③ See instruction sheet packed with unit for terminal connections.
④ Use width coil (with AFC winding) with approximate range of 3 to 29 Millihenries
⑤ Wire as in original circuit, except, connect original terminal 6 to new terminal 8, original #7 to new #6. Connect width coil to terminals 5 and 8. Use width coil secondary for AFC (If picture does not sync horizontally reverse secondary connections.)
⑥ Use with width coil WC-11.
⑦ Connect terminal "D" to terminal #2. Connect original terminal #4 to new terminal #4, original #5 to new #6. Connect width coil primary to terminals #5 and #8 and secondary to AFC circuit (If picture will not sync horizontally reverse secondary connections.)
⑧ Use original horiz. deflection coil network if necessary.
⑨ Use original deflection coil network.
⑩ Fabricate new mounting bracket.
⑪ Enlarge mounting hole.
⑫ Do not use secondary.
⑬ Connect to coded blue and red terminals.
⑭ Mount on top of chassis.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Silvertone PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	NOTES
T9	5.4kΩ	3.1Ω	250Ω	.44Ω	C80-253	A-3849	A-3019	RO-9 ①	S-5X ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V C IMP	REPLACEMENT DATA: Silvertone PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	5"	PM	3.1	T78-397	ST-105 Mod. P5-X	5A07	① Used in Models 2160 and 2162 ② Used in Models 2115B and 2150B
B	8"	PM	3.1②	T78-399 ①	ST-115 Mod. P8-V	8A21	
C	6"	PM	3.1②	T78-398 ②	ST-108 Mod. P6-X	6A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: Silvertone PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coils	0Ω CT	0Ω					
L2	Fil. Choke	0Ω						
L3	Neutr.Coil	0Ω						
L4	RF, Mixer Grid & Osc. Coils	0Ω						
L5	Fil. Choke	0Ω						
L6	RF Choke	0Ω						
L7	1st. Video IF	.9Ω						
L8	Sound Trap	.2Ω	0Ω	T10-574	20-1021	TV-150 *	6193 *	Silvertone part #includes C29
L9	2nd. Video IF	.4Ω	.2Ω	T10-541	17-1062			
L10	3rd. Video IF	.2Ω	.2Ω	T10-542	17-1063			
L11	4th. Video IF	.3Ω	.3Ω	T10-543	17-1064			
L12	Series Peaking Coil	6.7Ω		T10-557	19-3093	TV-151	6177	90 Microhenries
L13	Shunt Peaking Coil	13.5Ω		T10-558	19-1923		6648	375 Microhenries
L14	Series Peaking Coil	10Ω		T10-566	19-3180 †	TV-184 †	6180 †	185 Microhenries, wound on 2IK Ω resistor
L15	4.5MC Trap	2Ω		T10-571	20-1004	TV-151	1470	Silvertone Part No. includes C40
L16	Shunt Peaking Coil	7.8Ω		T10-565	19-1923 ■		6648 ■	380 Microhenries, wound on 10K Ω resistor
L17	Sound IF	1Ω		T10-556	17-3400	TV-151	1469	Silvertone Part No. includes C42, C43 & C44
L18	Ratio Det.	3.8Ω	.2ΩCT	T10-552	17-1033 ▲	TV-110 ▲	1468 ▲	Tertiary winding -1,1
L19	Horiz. Osc.	46Ω		T10-555	19-1576	TV-183	6310	Silvertone Part No. includes C71 & R77
L20	Fil. Choke							Note 1

Note 1. Not used in all Models.
* Enlarge mounting hole.
† Parallel with 12KΩ resistor
■ Parallel with 10KΩ resistor
▲ When used as a replacement drill mounting holes and disconnect C46.

SILVERTONE MODELS 2110A, 2111, 2115B, 2150B, 2160, 2162 (Ch. 528.631, -1, Ch. 528.632, -1, -2, -3, -4, -5, Ch. 528.632A, -1, -2, -3, -5)

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Silvertone PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	5A @ 250V	T43-12		312005	341001	MTH5	HKP
M2	3AG P/T	1/4A @ 250V	T43-13		318.250		GJV 1/4	

MISCELLANEOUS

ITEM No.	PART NAME	Silvertone PART No.	NOTES
M3A	RF Tuner	T95-30	Ch. 528.632-3, 528.632A-3, 528.632-4
B	RF Tuner	T95-29	Ch. 528.632-2, 528.632A-2, 528.632-5, 528.632A-5, 528.632-1, 528.632A-1, 528.632, 528.632A
M4	Crystal Diode	T48-45	
M5	Ion Trap Magnet		
B2	Trimmer Cap.	T20-145	Horiz. Drive
	Cabinet	T42-515	Model 2110A
	Cabinet	T42-524	Model 2111
	Cabinet	T42-518	Model 2115B
	Cabinet	T42-517	Model 2150B
	Cabinet	T42-516	Model 2160
	Cabinet	T42-526	Model 2162
	Back Cover (Cabinet)	T32-21	Models 2110-A, 2115B, 2111, 2150B
	Back Cover (Cabinet)	T32-22	Models 2160, 2162
	Safety Glass	T48-58	Models 2110A, 2111
	Safety Glass	T48-61	Model 2115B
	Safety Glass	T48-59	Model 2150B
	Safety Glass	T48-60	Models 2160, 2162
	Mask	T31-197	Model 2110A, 2111
	Mask	T31-199	Model 2115B
	Mask	T31-198	Model 2150B
	Mask	T31-196	Model 2160, 2162
	Knob	T52-351	Channel Selector, Model 2110-A, 2150-B
	Knob	T52-373	Channel Selector, Model 2111
	Knob	T52-366	Channel Selector, Model 2115-B, 2160, 2162
	Knob	T52-352	Fine Tuning, Models 2110-A, 2115-B, 2150-B, 2160
	Knob	T52-374	Fine Tuning, Model 2111
	Knob	T52-378	Fine Tuning, Model 2162
	Knob	T52-353	On/Off Volume, Model 2110-A, 2150-B
	Knob	T52-375	On/Off Volume, Model 2111
	Knob	T52-361	On/Off Volume, Models 2115-B, 2160, 2162
	Knob	T52-354	Contrast Models 2110-A, 2115-B, 2150-B, 2160
	Knob	T52-376	Contrast Model 2111
	Knob	T52-379	Contrast Model 2162

TROUBLE SHOOTING AIDS (CONT.)

VIDEO

LOSS OF VIDEO

Check C41 for open. Check picture tube.

SOUND BARS

Check local oscillator alignment. Check setting of 4.5MC trap (A9). Check C40 for open or leaky.

POOR RESOLUTION

Substitute V1, V3, V4, V5 and V6. Check video detector crystal (M4). Check video IF components. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check video detector crystal (M4). Check C37, C38, C39, C41 and other components associated with V6 and M4. Check picture tube.

SMEAR

Substitute V6. Check L14 and L16 for open. Check R33 and R80 for change of value. Check C5 for leaky. Check C37, C38, C39 and C41 for leaky. Check picture tube. Check other components associate with V6 and picture tube.

ONE BLACK BAR ACROSS PICTURE

Check RF tuner, video IF and video amplifier tubes for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Substitute V7, V8 and V9. Check stages of V8B and V9 by shorting, momentarily, pin 8 of V8 to chassis. A loud noise should result.

If Unsatisfactory	If Satisfactory
Check components associated with V8B and V9.	Adjust ratio detector secondary slug (A8). Check sound IF alignment. Check associated circuit components.

BUZZ

Readjust ratio detector secondary slug for minimum buzz. If buzz is still objectionable substitute V8 and readjust. Check C8 for leakage.

DISTORTED

Check stages of V9 and V8B using audio signal generator.

If distorted	If Undistorted
Substitute V8 and V9. Check components associated with these stages.	Substitute V8 and V7. Check adjustment of ratio detector and audio IF A6, A7 and A8. Check components associated with V7 and V8A.

POWER

SMALL AND/OR DIM RASTER

Substitute V18. Measure B+.

If Low	If Satisfactory
Check B+ filter capacitors. Check other compoents of the B+ filter network.	Proceed as outlined under "HORIZONTAL INSUFFICIENT SWEEP".

DIM PICTURE AND/OR WEAK SOUND

Substitute V18. Proceed as outlined under "SMALL AND/OR DIM RASTER".

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Substitute V14, V15, V16 and V17. Check waveform at W13.

If Satisfactory	If Unsatisfactory
Check R87, R88, C78, T3 and other components associated with V16 and V17. Check C75, R84, R85 and other components associated with V15.	Check horizontal drive capacitor (B2). Check C73, C74, R83 and other components associated with V14 and the coupling network to V15 grid circuit.

INSUFFICIENT HIGH VOLTAGE

Substitute V14, V15, V16, V17 and V18. Proceed as outlined under "LOSS OF HIGH VOLTAGE".

BLOOMING

Substitute V15, V16 and V17. Check R87, R88, C78, T3 and other associated components.

GENERAL

RASTER SOUND NO PICTURE

See "LOSS OF VIDEO".

RASTER NO SOUND NO PICTURE

Substitute V1, V2, V3, V4, V5 and V6. Check video detector crystal. Check components associated with these stages.

RASTER SNOWY PICTURE WEAK SOUND

Substitute V1, V3, V4 and V 5. Check video IF components.

TOTAL LOSS OF SYNC

Substitute V10. Check C57 and other components associated with V10.

INTERMITTNET STREAKS

Check high voltage section for corona discharge and arcing. Excessive dirt around C78, T3 and tube socket of V17, may cause this condition. Check picture tube outer coating ground strap for good contact.

POOR FOCUS

Substitute V18. Check R3, R89 and T6. Check picture tube.

SET DEAD

Check fuse M1. Check switch on volume control. Check AC interlock assembly.

The Trouble- Shooting photographs shown above are made with permission of transmitting station WFBM-TV and in no way reflect the quality of the transmitted picture. Similarly, symptoms shown are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

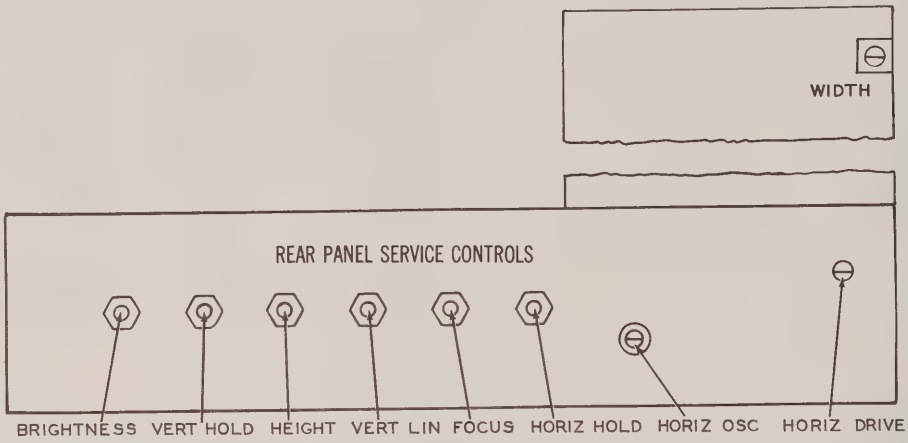
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal oscillator slug until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF detector buzz, adjust the ratio detector secondary (L18) located on top of chassis. (See tube placement chart).

FUSES

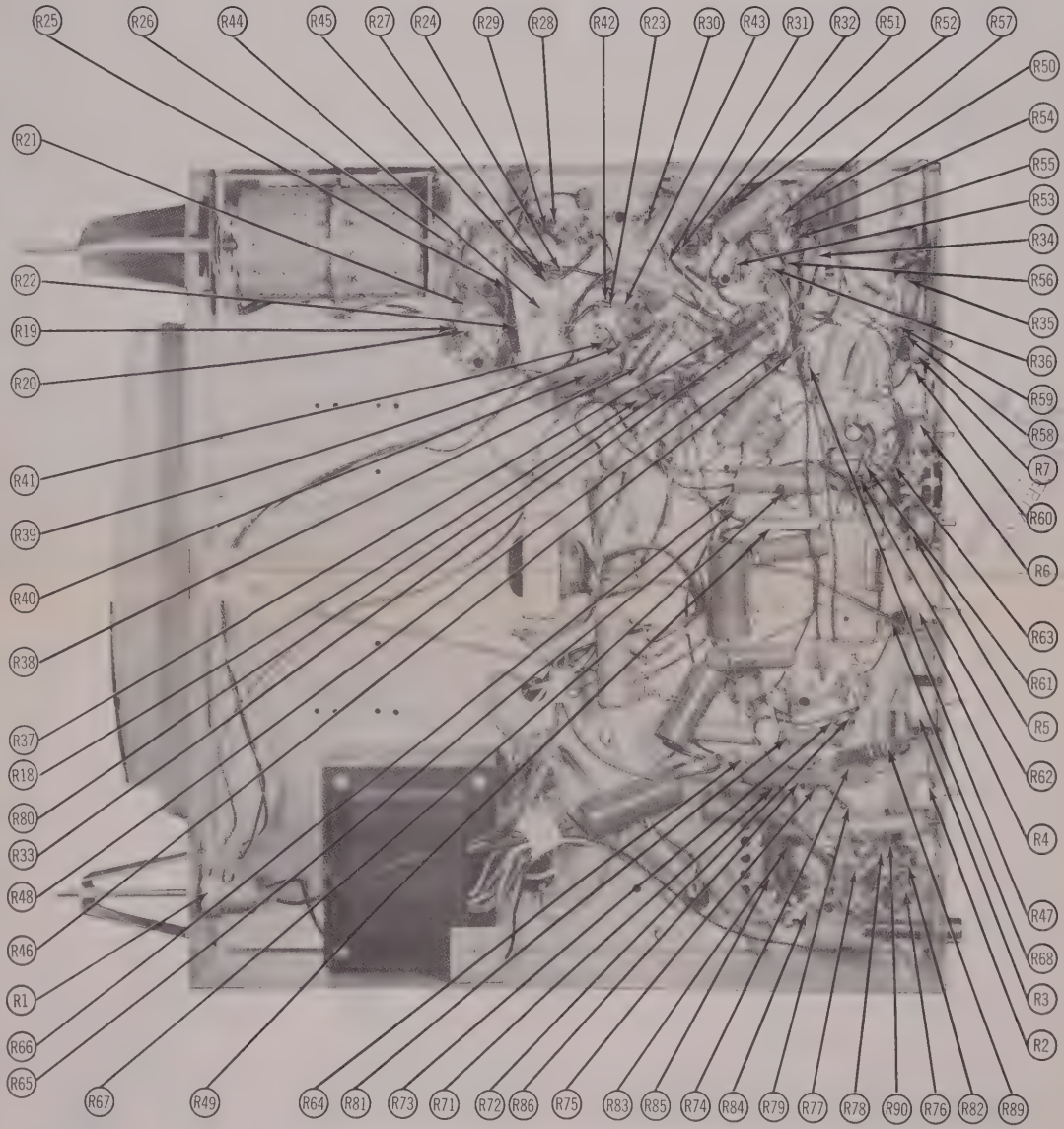
Two fuses are used. One for horizontal sweep circuit protection and one for LV power supply protection (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by positioning the focus coil. Adjust the three wing nuts located on the focus coil bracket until picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 7 wood screws. Remove rear cover.
3. Disconnect built-in antenna. Remove 2 wood screws. Remove antenna bracket.
4. Remove 4 chassis bolts. Remove chassis.
5. Remove 2 speaker nuts. Remove speaker (Not necessary for removal of chassis.).



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PHOTOFACT* Folder

SYLVANIA MODELS 105, 200, 205, 250 Series (Ch. 1-504-1, -2, -4,), 120, 126, 220, 225, 226, 275 Series (Ch. 1-510-1, -2, -4)

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SYLVANIA MODELS 105, 200, 205, 250 Series (Ch. 1-504-1, -2, -4,), 120, 126, 220, 225, 226, 275 Series (Ch. 1-510-1, -2, -4)

MODEL 220-MU

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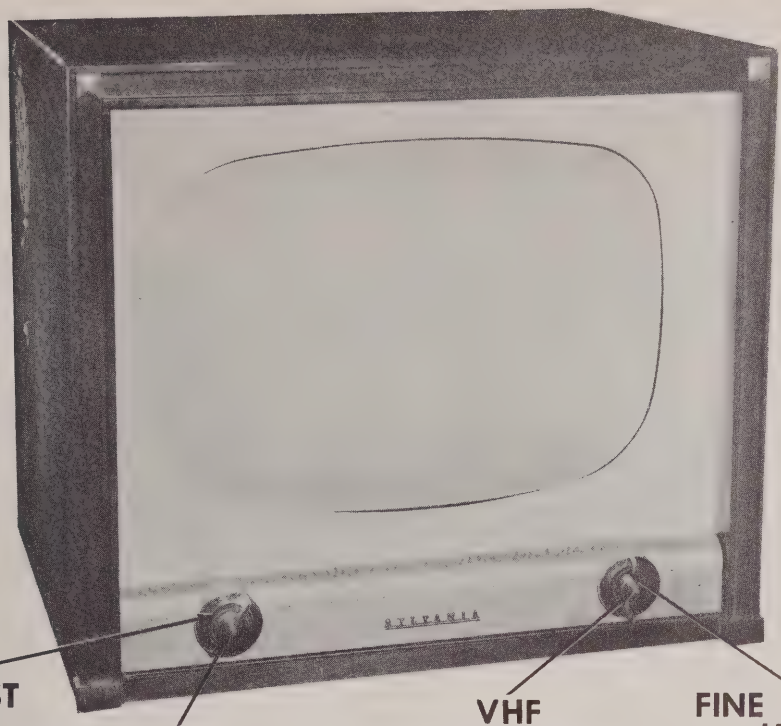

SYLVANIA MODEL 220-MU (Ch. 1-510-4)

TRADE NAME	Sylvania Models 105, 200, 205, 250, Series (Ch. 1-504-1, -2, -4) 120, 126, 220, 225, 226, 275, Series (Ch. 1-510-1, -2, -4)
MANUFACTURER	Sylvania Electric Prod., Inc., Radio & Television Div., 254 Rano St., Buffalo, New York
TYPE SET	Television Receiver
TUBES	Twenty-Four

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.82 Amp @ 117 Volts AC
TUNING RANGE-Channels 2 thru 13 (VHF) 14 thru 83 (UHF), Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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SYLVANIA MODELS 105, 200, 205, 250 Series (Ch. 1-504-1, -2, -4,), 120, 126, 220, 225, 226, 275 Series (Ch. 1-510-1, -2, -4)

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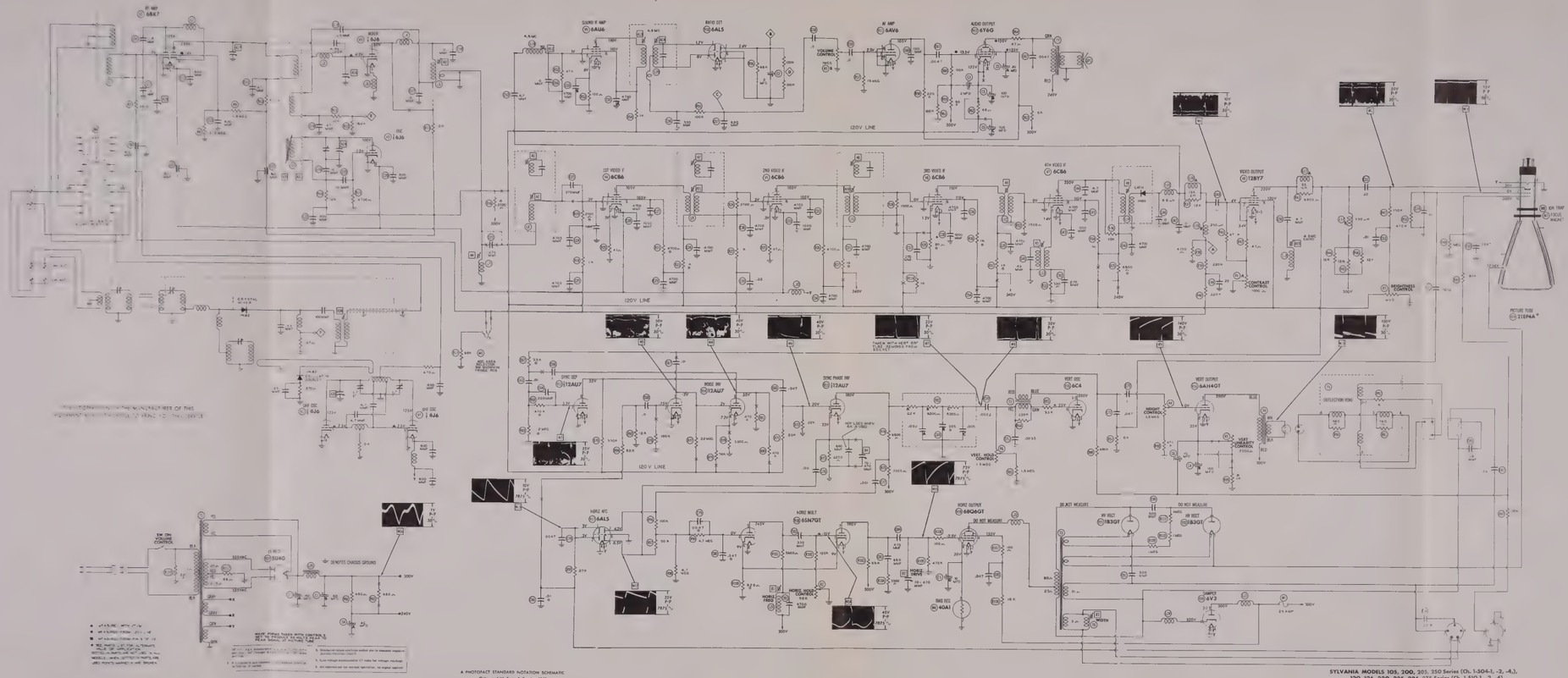

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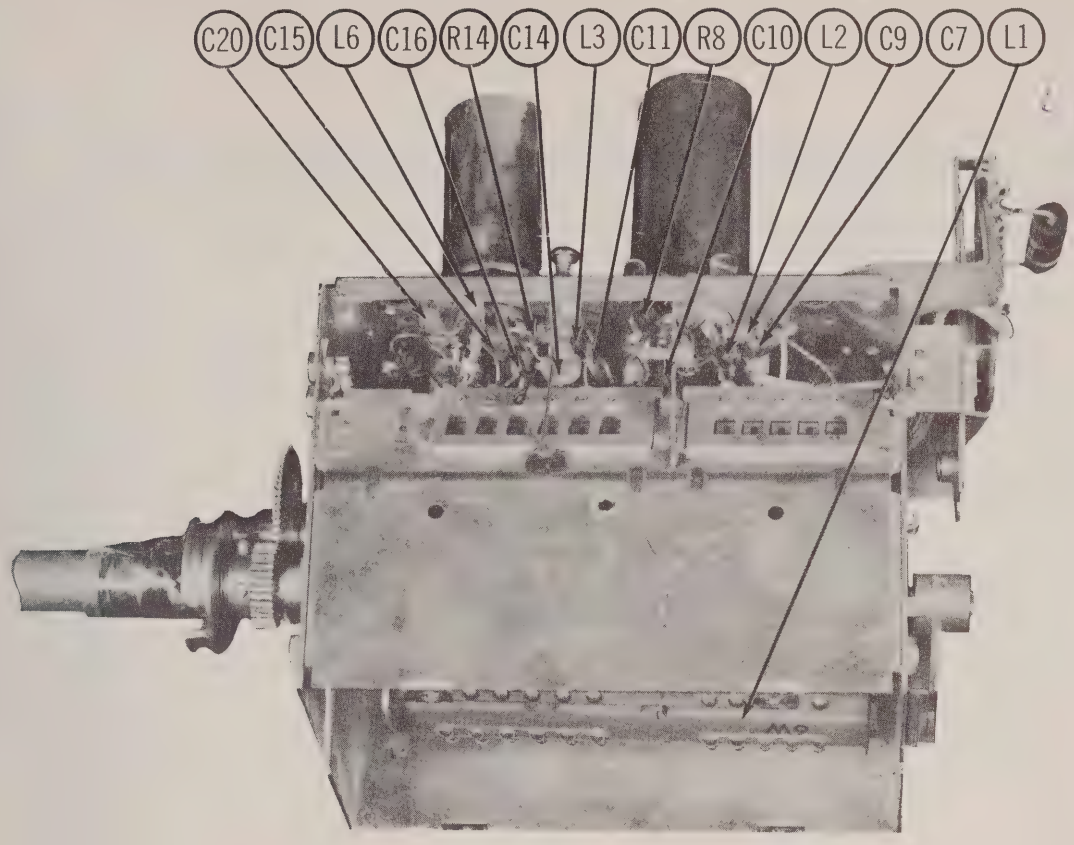
SYLVANIA MODELS 105, 200, 205, 250 Series (Ch. 1-504-1, -2, -4), 120, 126, 220, 225, 226, 275 Series (Ch. 1-510-1, -2, -4)

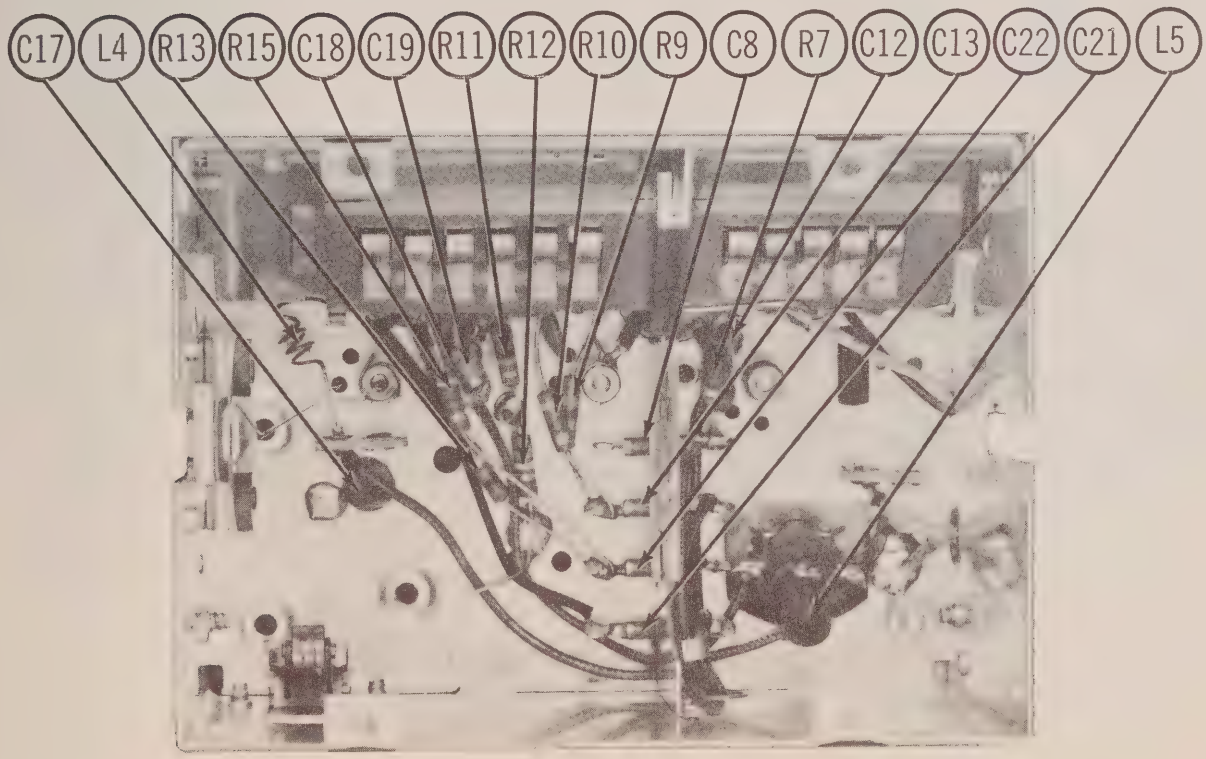
CHASSIS TOP VIEW

SYLVANIA MODELS 105, 200, 205, 250 Series (Ch. 1-504-1, -2, -4), 120, 126, 220, 225, 226, 275 Series (Ch. 1-510-1, -2, -4)

CHASSIS BOTTOM VIEW–CAPACITOR IDENTIFICATION



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to the ungrounded side of C39. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Chassis 504-1, 504-2, 510-1 and 510-2 use Sarkes Tarzian switch type tuners. Ch. 510-4 and 504-4 use G.I. turret type tuners.
Where it is necessary to distinguish between the two types due to alignment differences they will be indicated as follows:
* Indicates G.I. tuner
† Indicates Sarkes Tarzian tuner

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	Not used.	39.75MC (Unmod)	Any not used locally.	Use VTVM. DC probe to point (A) Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	.001 MFD	High side to pin 5 (grid) of 6J6* (V3) or pin 7(grid of 6X8†. Low side to chassis.	43.25MC (10MC Swp)	42.1MC 45.75MC	See remarks	Vert. Amp. of scope thru detector (Fig.1) to pin 2 (cathode) of 6CB6 (V4). Low side to chassis.	A2, A3, A4 *	Remove bias battery during this step. Short pin 5 to pin 6 of 6CB6 (V4). On Tarzian tuner set channel switch to any high channel not in use. On G.I. tuner set switch between any two channels. Adjust for response curve similar to Fig. 2. Remove short from pins 5 and 6 of V4.
3.	Direct	High side to an ungrounded tube shield floating over VHF converter tube. Low side to chassis.	Not used	41.25MC	Any not used locally	Use VTVM. DC probe to point (A) Common to chassis.	A5	Adjust for MINIMUM deflection.
4.	"	"	"	47.25MC	"	"	A6	"
5.	"	"	"	41.25MC	"	"	A7	"
6.	"	"	"	44.0MC	"	"	A8	Adjust for maximum deflection. Attenuate generator output to maintain 1 to 2 volts at VTVM.
7.	"	"	"	42.0MC	"	"	A9	"
8.	"	"	"	45.2MC	"	"	A10	"
9.	"	"	"	43.2MC	"	"	A11	"
10.	"	"	43.25MC (10MC Swp)	41.25MC 42.1MC 45.75MC 47.25MC	"	Vert. Amp. thru 33KΩ to point (A). Low side to chassis.		Check for response curve similar to Fig. 3. If necessary retouch A8 thru A10 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±2%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	.001MFD	High side to point A Low side to chassis.	4.5MC (Unmod)	Any not used locally.	DC probe to point (B) Common to chassis.	A12, A13	Adjust for maximum deflection.
12.	"	"	"	"	DC probe to point (C) Common to point (B)	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	.001 MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any not used locally	Vert. Amp. to point (B). Low side to chassis.	A12, A13	Disconnect stabilizer capacitor C2. Adjust for curve of maximum amplitude and symmetry as in Fig. 4.
12.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A14	Reconnect capacitor C2. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 5, SLIGHTLY retouch A13 for maximum amplitude and straightness of crossover lines

4.5MC TRAP ALIGNMENT

Short pin 1 (grid) of 6CB6 (V7) to chassis during adjustment.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	.001MFD	High side to pin 2 (grid) of 12BY7 (V8). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe thru detector (Fig.1) to pin 11 of picture tube, Common to chassis.	A15	Adjust for MINIMUM deflection.

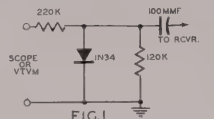


FIG.1

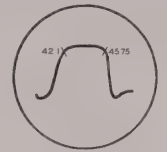


FIG.2

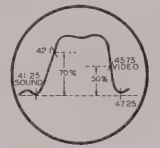


FIG.3

FIG.4

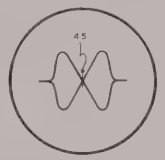


FIG.5

FIG.6

G.I. TUNER ALIGNMENT

The oscillator adjustment screws (adjustments A20 thru A31) are reached through a hole to the upper right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Disconnect the primary winding of L9, 2nd. Video IF Transformer, from pin 5 of 6CB6 (V4). Connect a 330Ω resistor in place of the primary winding.
Remove 6CB6 (V5) from its socket.
During alignment the use of two marker generators is required. The RF marker generator should be loosely coupled to the sweep generator, or if the sweep generator contains a built in marker it may be used. The IF marker generator should be connected through a .001 to .005MFD capacitor to pin 2 of 6CB6 (V4) and set to the Video IF frequency 45.75MC, during oscillator alignment.
Connect the negative lead of a 2.5 volt bias supply to the tuner AGC line. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	69MC (10MC Swp)	67.25MC 71.75MC	4	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A16, A17, A18, & wire loop	Adjust for response curve within limits as shown in Fig. 8. Position of wire loop near A16 affects bandwidth.
15.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response as in Fig. 8. If necessary reposition wire loop for desired bandwidth.
16.	"	"	69MC (10MC Swp)	67.25MC 71.75MC	4	"		Retouch A18, if necessary for symmetrical response.
17.	.001MFD	High side to pin 5 (grid) of 6J6 (V3). Low side to chassis.	43.25MC (10MC Swp)	42.1MC 45.75MC	Set tuner between any two channels	Vert. Amp. thru detector (Fig. 7) to pin 5 of 6CB6 (V4). Low side to chassis.	A3, A2, A4	Adjust for symmetrical overcoupled, double peaked response curve with markers on peaks.
18.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	69MC (10MC Swp)	67.25MC	4	"	A19	Adjust to make 67.25MC RF marker and 45.75MC IF marker coincide on response curve. If necessary adjust A22 to bring marker within proper tuning range of A19.
19.	"	"	57MC (10MC Swp)	55.25MC 59.75MC	2	"	A20	Adjust to make Video RF marker 45.75MC IF marker coincide on response curve with band pass as in Fig. 6. If necessary retouch A16 through A18 for satisfactory compromise on all channels.
			63MC (10MC Swp)	61.25MC 65.75MC	3		A21	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A22	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A23	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A24	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A25	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A26	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A27	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A28	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A29	
			207MC (10MC Swp)	205.25MC 209.75MC	12		A30	
			213MC (10MC Swp)	211.25MC 215.75MC	13		A31	

SARKES TARZIAN TUNER OSCILLATOR ALIGNMENT

Connect 3 volt bias battery as under Video IF Alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
20.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 33KΩ to point (A). Low side to chassis.	A32	Adjust to place sound marker in trap notch of response curve. Video marker should be at 50%.
21.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		Check all high band channels for marker placement as in Step 20. If necessary make slight adjustment of A32 for satisfactory compromise on all high band channels.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
22.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A33	Adjust to place sound marker in trap notch of response curve. Video marker should be at 50%.
23.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"		Check all low band channels for marker placement as above if necessary make slight adjustment of A33 for satisfactory compromise on all low band channels.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

THE RF AND MIXER PORTION OF THIS TUNER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF OF THIS PORTION SHOULD NOT BE REQUIRED IN THE FIELD.

SYLVANIA MODELS 105, 200, 205, 250 Series (Ch. 1-504-1, -2, -4), 120, 126, 220, 225, 226, 275 Series (Ch. 1-510-1, -2, -4)

ALIGNMENT INSTRUCTIONS (CONT.)

UHF TUNER ALIGNMENT - Ch. 1-504-4, 1-510-4

Switch receiver to UHF position.
Connect -2.5 volt bias to tuner AGC line.
Disconnect primary of L9 and connect 330Ω resistor to pin 5 of V4 as under G.I. tuner alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
24.	.001MFD	High side to point (F). Low side to chassis.	43.25MC (10MC Swp)	42.1MC 45.75MC	UHF	Vert. Amp. thru detector (Fig. 7) to pin 5 of 6CB6 (V4). Low side to chassis.	A34	Adjust for response curve similar to Fig.2.
25.	Fig. 8	Thru dummy to antenna terminals.	464 to 896MC (10MC Swp)	Use separate marker generator. Couple to test point F. 42.1MC 45.75MC	"	"		Tune sweep generator from 464MC to 896MC while at the same time tuning UHF tuner thru corresponding range. Observe response curve and if necessary retouch A34 for best compromise on dip and tilt. See Fig. 2. Remove test equipment, remove 330Ω resistor from pin 5 of V4, and restore primary connection of L9 to pin 5 of V4.
26.	"	Thru dummy to antenna terminals.	Not used	896MC (Unmod.)	"	Use VTVM. Connect DC probe to point (A). Common to chassis.	A35	Turn UHF tuning knob to extreme high frequency end of rotation. Adjust A35 for maximum deflection.

UHF TUNER ALIGNMENT - CH. 1-504-2, 1-510-2

Remove VHF tuner cover.
Set VHF tuner to UHF position.
Remove 6AN4 mixer tube from UHF tuner.
Disconnect primary winding of L9, sound video IF transformer, from pin 5 of 6CB6 (V4).
Connect a 330Ω resistor in place of the primary winding.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
27.	1200Ω in series with .05 MFD Cap.	High side to pin 1 or 7 of 6AN4 socket. Insulate exposed portions of dummy antenna to prevent shorting of circuit components. Low side to chassis.	43.25MC (10MC Swp)	42.1MC 45.75MC	UHF	Vert. Amp. thru detector (Fig.1) to pin 5 of 6CB6 (V4). Low side to chassis.	A36, A37	Adjust for maximum amplitude symmetrical flat-topped response as in Fig. 2. (Note. In early production models where A36 is not a slug adjustment, compress or expand the coil turns for the desired effect)

ALTERNATE ALIGNMENT METHOD:
Tune in a UHF station test pattern and adjust A36 and A37 for best vertical wedge definition.

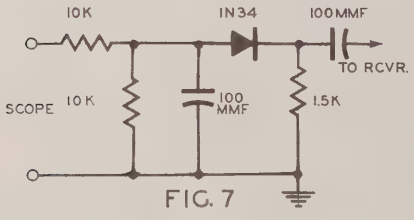


FIG. 7

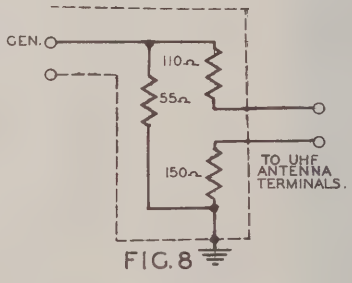
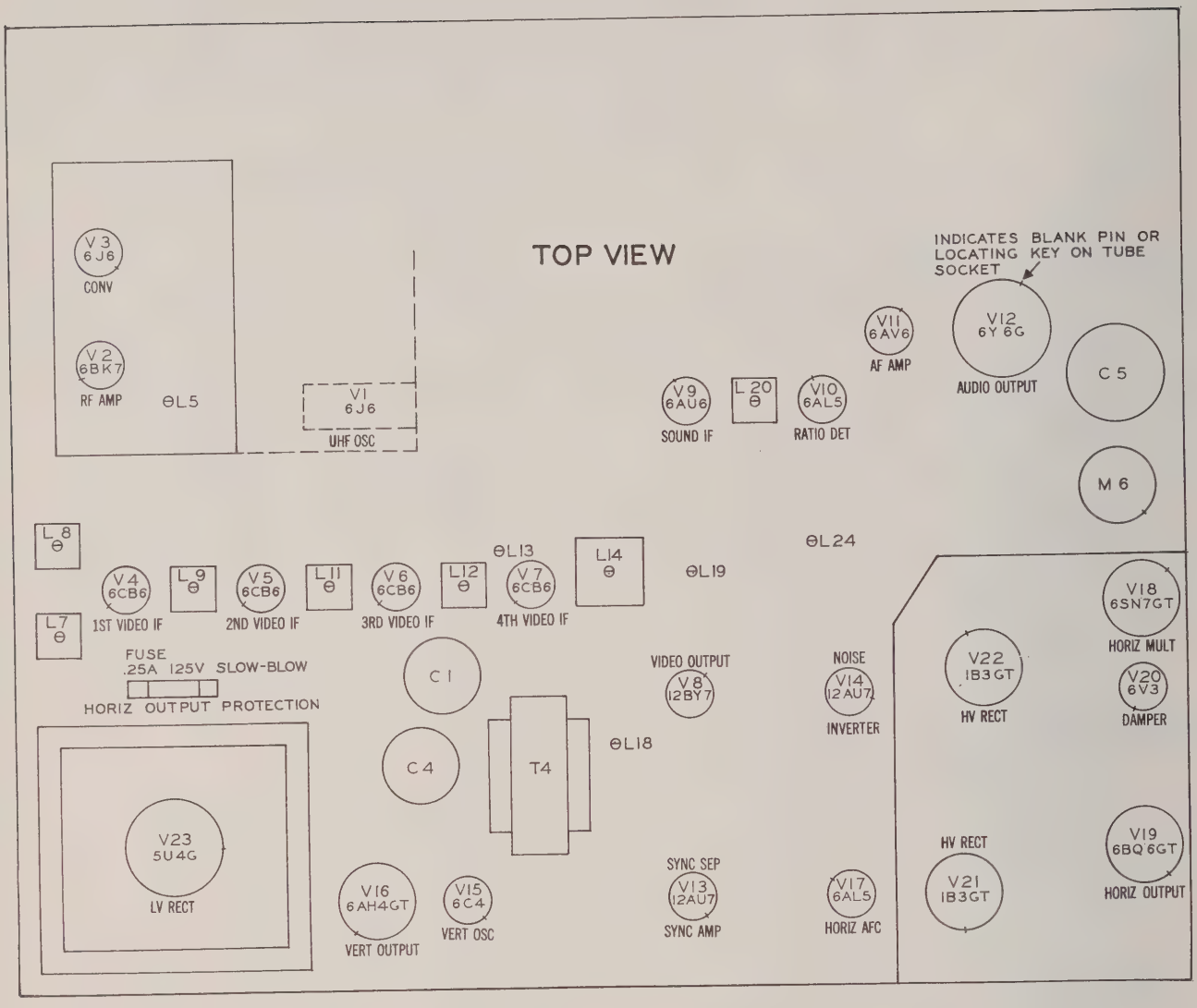


FIG. 8

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V23

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, V6, V7, V12 (V1 UHF Only)
No pic, no sound, has snow - V2, V3, V4
No pic, has sound, has raster - V8, V24
Has pic, no sound - V9, V10, V11, V12

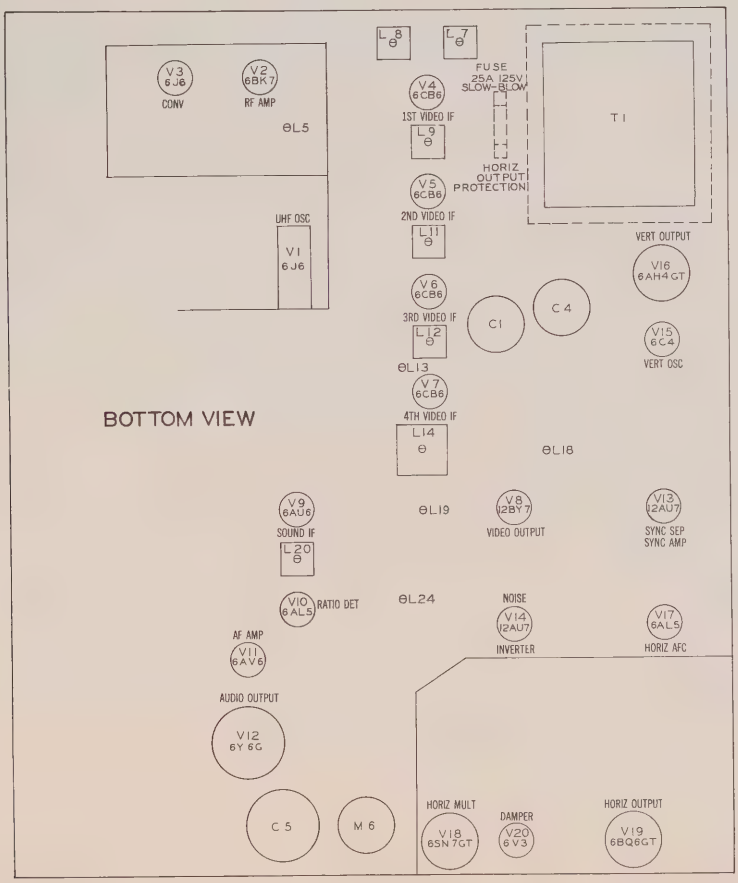
SYNC FAILURE
No vert. sync - V13, V15
No horiz. sync - V13, V17, V18
No vert. or horiz. sync - V13, V14

SWEEP FAILURE
No raster, has sound - V18, V19, V20, V21, V22, V24 Fuse (M1)
No vertical deflection - V15, V16
Poor vert. linearity or foldover - V15, V16
Poor horiz. linearity or foldover - V18, V19, V20
Narrow picture - V18, V19, V20, V21, V22, V23
Vert. off freq. - V13, V15
Horiz. off freq. - V13, V17, V18

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	INF	INF	.1Ω	0Ω	10KΩ	10KΩ	0Ω		
V 2	6BK7	INF	450KΩ	0Ω	.1Ω	0Ω	ǂ500Ω	2.2Meg	INF	0Ω
V 3	6J6	ǂ10KΩ	ǂ10KΩ	0Ω	.1Ω	190KΩ	4.7KΩ	0Ω		
V 4	6CB6	450KΩ	47Ω	0Ω	.1Ω	ǂ1KΩ	ǂ4.7KΩ	0Ω		
V 5	6CB6	450KΩ	47Ω	.1Ω	0Ω	ǂ1KΩ	ǂ4.7KΩ	0Ω		
V 6	6CB6	.2Ω	180Ω	.1Ω	0Ω	ǂ1KΩ	ǂ1KΩ	0Ω		
V 7	6CB6	.2Ω	330Ω	.1Ω	0Ω	ǂ7KΩ	ǂ1KΩ	0Ω		
V 8	12BY7	200Ω	470KΩ	200Ω	.1Ω	.1Ω	0Ω	†4.1KΩ	ǂ0Ω	INF
V 9	6AU6	47KΩ	0Ω	.1Ω	0Ω	ǂ1KΩ	ǂ1KΩ	100Ω		
V 10	6AL5	INF	INF	.1Ω	0Ω	0Ω	0Ω	68KΩ		
V 11	6AV6	15Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†230KΩ		
V 12	6Y6G	70KΩ	40KΩ	†680KΩ	†10KΩ	130KΩ	†680Ω	40KΩ	40KΩ	
V 13	12AU7	†10KΩ	22KΩ	2.2KΩ	.1Ω	.1Ω	ǂ330	1.6Meg	0Ω	0Ω
V 14	12AU7	ǂ22Meg	100KΩ	0Ω	0Ω	0Ω	230KΩ	ǂ22Meg	3.3KΩ	.1Ω
V 15	6C4	▲780KΩ	INF	0Ω	.1Ω	▲780KΩ	2.1Meg	0Ω		
V 16	6AH4GT	1.6Meg	0Ω	INF	▲260KΩ	†940Ω	▲110Ω	.1Ω	2.4KΩ	
V 17	6AL5	27KΩ	27KΩ	.1Ω	0Ω	4.8Meg	0Ω	4.8Meg		
V 18	6SN7GT	130KΩ	†68KΩ	820Ω	9.4Meg	†5.6KΩ	820Ω	.1Ω	0Ω	
V 19	6BQ6GT	INF	.1Ω	INF	†18KΩ	470KΩ	†18KΩ	0Ω	120Ω	Top Cap ▲27Ω
V 20	6V3	INF	INF	INF	.1Ω	0Ω	†40Ω	INF	INF	Pin 9 †40Ω / Top Cap 450KΩ
V 21	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ▲87Ω
V 22	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ▲INF
V 23	5U4G	INF	110KΩ	INF	88Ω	INF	89Ω	INF	110KΩ	
V 24	21EP4A	0Ω	470KΩ	Pin 9 ▲260KΩ	Pin 11 180KΩ	.1Ω				

ǂ MEASURED FROM 120VDC LINE
† MEASURED FROM PIN 8 OF V23.
▲ MEASURED FROM TOPCAP OF V20.



TUBE PLACEMENT CHART

GENERAL DESCRIPTION

This chassis employs 24 tubes including the picture tube, plus one germanium diode.

This model includes an ultra high frequency tuner in addition to the VHF tuner. When the selector is switched to the UHF position, the VHF oscillator is disabled and the output of the UHF which is at the intermediate frequency is fed through the RF and bandpass stages of the VHF tuner for additionsl amplification. The UHF tuner is continous tuning from channel 14 through 84.

The output of the VHF tuner is then fed through four stagger tuned stages of IF amplification. A crystal diode functions as the Video Detector. The video if then applied to one video amplifier before being applied to the picture tube.

Automatic gain control is produced by the AGC rectifier, amplified by the AGC amplifier and applied to the RF and IF amplifiers. The tuner AGC clamp prevents the tuner AGC line from going positive on weak signals.

The sync pulses are seperated from the video signal, amplified then clipped and applied to the horizontal discriminator and vertical integrater. The sync information from the vertical integrater is applied to the vertical oscillator. The oscillator then produces a peaked sawtooth wave in step with the vertical sync pulses from the station. This is applied to the vertical output tube which energizes the vertical deflection coils.

The horizontal sync pulses from the sync clipper are fed to the horizontal discriminator. A voltage from the horizontal osc. is also fed to the discriminator. The output of the discriminator is applied to the control tube which acts to hold the horizontal oscillator in sync with the incoming signal. The oscillator actuates the discharge tube through the ringing coil producing a peaked sawtooth wave. This drives the horizontal output tube which energizes the horizontal deflection coils.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Check waveform at W15;

If not satisfactory,	If satisfactory,
Substitute V18. Check associated circuit components.	Substitute V19, V20 and M6. Check associated components.

INSUFFICIENT SWEEP

Check setting of drive and horizontal width controls.

Check amplitude of waveform W15;

If not sufficient,	If sufficient,
Substitute V18. Check components.	Substitute V19, V20 and V23. Check associated components.

DRIVE LINES

If drive control does not correct this trouble, substitute V19 and V20. Check C83.

COMPRESSED LEFT SIDE

Substitute V20. Check damper circuit.

FOLDS

Substitute V20 and check components.

XMAS TREE EFFECT

Substitute V18 and check components of oscillator circuit, especially C81 for open.

VERTICAL

LOSS OF SWEEP

Check waveform at W9;

If not satisfactory,	If satisfactory,
Substitute V13 and V15. Check associated circuit components.	Substitute V16 and check associated components.

INSUFFICIENT SWEEP

Check waveform at W9;

If not satisfactory,	If satisfactory,
Substitute V15 and check circuit components.	Substitute V16 and check circuit components.

COMPRESSED BOTTOM

Substitute V16. Check C4b and C72.

FOLDS

Substitute V15 and V16. Check C75.

COMPRESSED AT TOP

Substitute V16. Check R89 and associated components.

SYNC

HORIZONTAL

LOSS OF SYNC

Check waveform at W12;

If not satisfactory,	If satisfactory,
Substitute V14 and V17, Check associated components.	Substitute V18 and check associated components.

CRITICAL HOLD

Substitute V17 and V18, if no change is noted, follow procedure outlined under "HORIZONTAL LOSS OF SYNC".

PULLING PICTURE

Substitute V17 and check associated components.

VERTICAL

LOSS OF SYNC

Check waveform at W8;

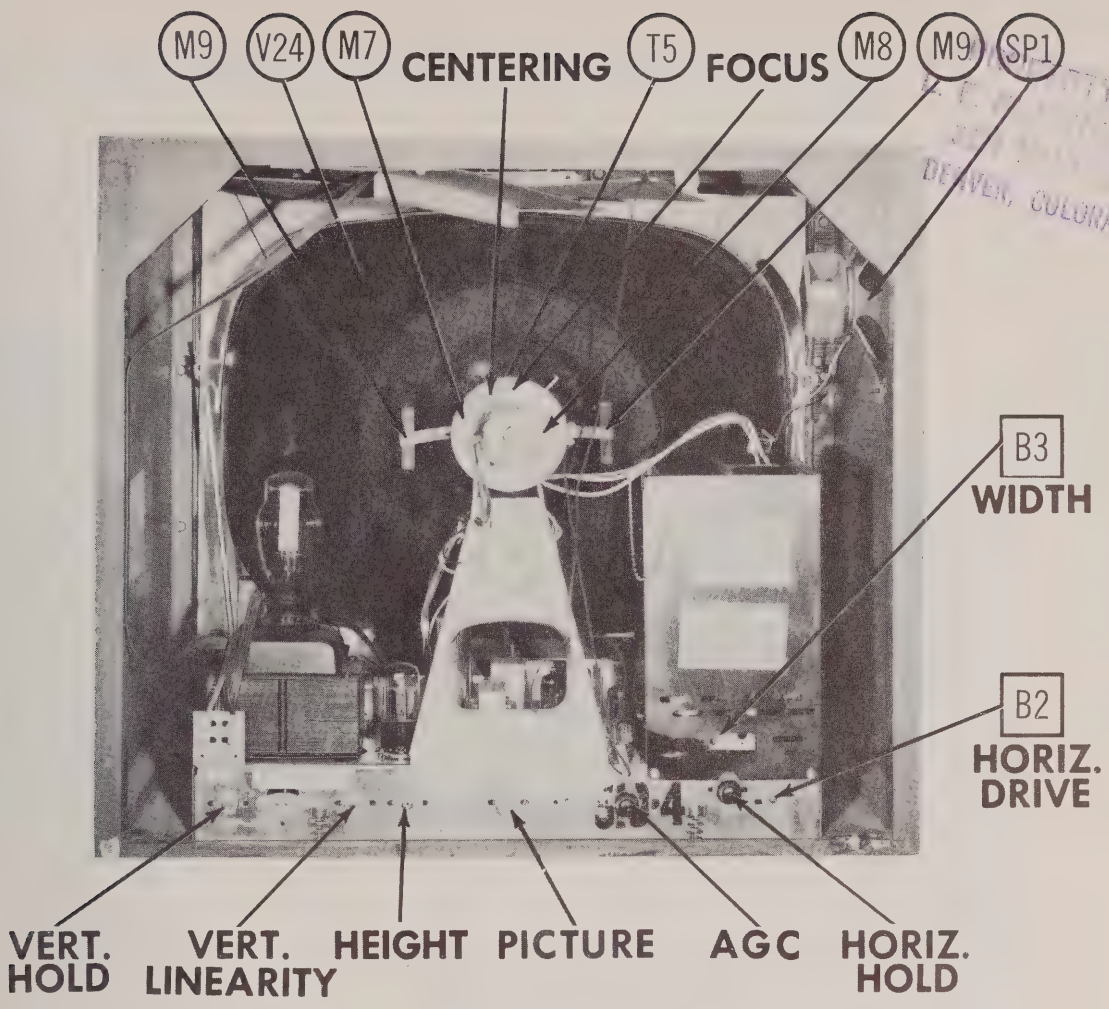
If not correct,	If correct,
Substitute V13. Check coupling network.	Substitute V15 and check associated components.

CRITICAL HOLD

Substitute V13 and V15. Check circuit components.

TRIGGERING

Substitute V15 and V16. Check associated components.



CABINET-REAR VIEW

UNIVERSITY OF
DENVER, COLORADO

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control at its mid-position.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) counter clockwise as far as possible without the presence of vertical white lines or compression of the center of the picture.

Adjust the horizontal size slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally. If B3 is adjusted the adjustment of B2 should be checked.

SYNC BALANCING TRIMMER ADJUSTMENT

Tune in a TV signal.

Short pin 2 (plate) of 6AL5 (V17) to chassis.

Connect the DC probe of a VTVM to pin 4 (grid) of 6SN7 (V18). Connect the common lead to chassis.

Adjust the sync balancing trimmer (B4) for minimum reading at VTVM.

With horizontal hold control at mid-position, adjust B1 until picture moves back and forth across the screen, with blanking bar vertical.

Remove the short from pin 2 of V17.

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

CHASSIS BOTTOM VIEW–TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: SYLVANIA Part No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RTMA BASE TYPE	NOTES
V1	UHF Oscillator	6J6	6J6	7BF	
V2	RF Amplifier	6BK7	6BK7	9AJ	
V3	Converter	6J6	6J6	7BF	
V4	1st. Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V7	4th. Video IF Amp.	6CB6	6CB6	7CM	
V8	Video Output	12BY7	12BY7	9BT	
V9	Sound IF Amp.	6AU8	6AU8	9BK	
V10	Ratio Detector	6AL5	6AL5	6BT	
V11	AF Amplifier	6AV6	6AV6	7BT	
V12	Audio Output	6V6G	6V6G	7S	
V13	Sync Separator-Sync Phase Inv.	12AU7	12AU7	9A	
V14	Noise Inverter	12AU7	12AU7	9A	
V15	Vert. Oscillator	6C4	6C4	6BG	
V16	Vert. Output	6AH4GT	6AH4GT	8EL	
V17	Horiz. AFC	6AL5	6AL5	6BT	
V18	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V19	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V20	Damper	6V3	6V3	9BD	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	HV Rectifier	1B3GT	1B3GT	3C	
V23	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SYLVANIA Part No.	REPLACEMENT DATA: SYLVANIA Part No.	RTMA BASE TYPE	NOTES
V24A	21EP4A	21EP4A	12D	① Circuit changes necessary.
		21EP4 ①	12D	
		21FP4 ①	12C	
		21FP4A ①	12C	
B	17TP4	17TP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SYLVANIA Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C1A	▲40	400	181-2004	AFH3-64		CO35			FP266	TVL-2675
B	▲80	400								
C2	2	50	181-1001	PRS1S0,4		BBR2-50T		TC302		TVA-1301
C3	2	50	181-1001	PRS1S0/4		BBR2-50T		TC302		TVA-1301
C4A	▲40	400	181-2005	AFH3-140		C104		FP239.5		TVL-3762
B	▲100	50								
C5A	▲30	350								Note 1
B	▲100	200								Note 2
C	▲100	200								Note 3
D	10	100								
C6	10	500	181-1010	PRS500/10		BR1050		TC83		TVA-1953
C7	5			SIGNP0	TCZ-4.7		NP0K-050	ZT-555	5TCCB-V47	
C8	800			CN-1-001	MFT-1000				503C-D1	
C9	1.8						NP0K-1R8			
C10	800			BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C11	47			BPD-000047	D6-470	TM5Q5	GP1K-470	UC-5447	5GA-Q47	
C12	800			BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C13	800			CN-1-001	MFT-1000				503C-D1	
C14	47			BPD-000047	D6-471	TM5D1	801-001	DC-521	5HK-D1	
C15	10			SIGNT50	TCN-10		N750K-100	NT-541	5TCU-Q1	
C16	10			SIGNT50	TCN-10		N750K-100	NT-541	5TCU-Q1	
C17	10			SI10	D6-100		GP1K-100	UC-541	5GA-Q1	
C18	10			SI10	D6-100		GP1K-100	UC-541	5GA-Q1	
C19	1.5			SL.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C20	800			BPD-0008	DD-801	TM5D1	801-001	DC-521	5HK-D1	
C21	800			CN-1-001	MFT-1000				503C-D1	
C22	800			CN-1-001	MFT-1000				503C-D1	
C23	270		166-027GN	SI270	D6-271		GP2K-271	UC-5327	5GA-T27	Note 8
C24	4700		166-4700D	BPD-0047	MD-502	TM5D5	81L-005	DC-525	5HK-D47	
C25	4700		166-4700D	BPD-0047	MD-502	TM5D5	81L-005	DC-525	5HK-D47	
C26	4700		166-4700D	BPD-0047	MD-502	TM5D5	81L-005	DC-525	5HK-D47	
C27	4700		166-4700D	BPD-0047	MD-502	TM5D5	81L-005	DC-525	5HK-D47	
C28	1000		166-1000D	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C29	4700		166-4700D	BPD-0047	MD-502	TM5D5	81L-005	DC-525	5HK-D47	
C30	4700		166-4700D	BPD-0047	MD-502	TM5D5	81L-005	DC-525	5HK-D47	
C31	4700		166-4700D	BPD-0047	MD-502	TM5D5	81L-005	DC-525	5HK-D47	
C32	4700		166-4700D	BPD-0047	MD-502	TM5D5	81L-005	DC-525	5HK-D47	
C33	1000		166-1000D	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D47	
C34	4700		166-4700D	BPD-0047	MD-502	TM5D5	81L-005	DC-525	5HK-D47	
C35	4700		166-4700D	BPD-0047	MD-502	TM5D5	81L-005	DC-525	5HK-D47	
C36	4700		166-4700D	BPD-0047	MD-502	TM5D5	81L-005	DC-525	5HK-D47	
C37	270		166-027DD	SI270	D6-271		GP2K-271	UC-5327	5GA-T27	Note 4
C38	1000		166-1000D	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C39	.22	200	160-0502	P488-22		PTE4P22		PT4025	2TM-P22	
C40	4700		166-4700D	BPD-0047	DD-502	TM5D5	81L-005	DC-525	5HK-D47	
C41	4700		166-4700D	BPD-0047	DD-502	TM5D5	81L-005	DC-525	5HK-D47	
C42	270		166-027GN	SI270	D6-271		GP2K-271	UC-5327	5GA-T27	
C43	1000		166-1000D	BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C44	4.7		166-008N	SI4.7NP0	TCZ-4.7		NP0K-4R7	ZT-555	5TCCB-V47	
C45	43		166-0043P							
C46	10		166-010DP	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C47	10		166-010P	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C48	.22	200	160-0502	P488-22		PTE4P22		PT4025	2TM-P22	
C49	.1	200	160-0501	P286-1	DF-104	PJ2P1		PT401	2TM-P1	
C50	4.7		166-008N	SI4.7NP0	TCZ-4.7		NP0K-4R7	ZT-555	5TCCB-V47	
C51	.22	400	162-0402	P488-22		PTE4P22		PT4025	4TM-P22	
C52	.01	200	162-0501	P488-01	D6-103	PTA5S1	GP2-333-103	PT4U	4TM-S1	
C53	4.7		166-008N	SI4.7NP0	TCZ-4.7		NP0K-4R7	ZT-555	5TCCB-V47	
C54	10		166-0010P	SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C55A	4700		166-001DD	BPD-EX0047	DD-2-502	TM5DD5	81S-005	DCD-525	5HK-ED47	
B	4700									
C56	330		166-0330	SI330	D6-331		GP2K-331	UC-5333	5GA-T33	
C57	680	500	183-0680	SI680	D6-681		GP2K-681	UC-5368	1FM-3	

PARTS LIST AND DESCRIPTIONS

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SYLVANIA Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No	SPRAGUE Part No	NOTES
C58	.01	200	162-0611	P45a-01	D6-103	PTE4S1	GP2-333-103	PT4U	4TM-S1	
C59	.01	200	162-0611	P488-01	D6-103	PTE4S1	GP2-333-103	PT4U	4TM-S1	
C60	100	500	183-0100	1458-0001	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C61	.0047	600	162-06247	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	Note 5
C62	.0047	600	162-06247	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C63	.01	300		P688-01	D6-103	PTE6S1	GP2-333-103	PT6U	6TM-S1	Note 6
C64	220	500		1458-00025	D6-221	5W5T25	GP2K-221	MC340	1FM-325	Note 7
C65	.047	200	160-04147	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	
C66	.1	600		P688-1	DF-104	PTE6P1		PT601	6TM-P1	Note 8
C67	.01	500		P488-01	D6-103	PTE4S1	GP2-333-103	PT6U	6TM-S1	Note 8
C68	.01	200		P488-01	D6-103	PTE4S1	GP2-333-103	PT4U	4TM-S1	Note 8
C69A	.002		}	P688-002		PTE6D2		PT622		
B	.005		} ▲90-0007	P688-005	▲PC-100	PTE6D5	▲1405-01	PT625	▲101C1	
C	.005		}	P688-005		PTE6D5		PT625		
C70	.0022	600	162-06222	P688-0022	D6-222	PTE6D22	GP2-333-222	PT6222	6TM-D22	
C71	.0033	600	162-06233	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C72	.047	400	162-06147	P688-047	DF-503	PTE6S47		PT6147	6TM-S47	
C73	.0033	600	162-06233	P688-0033	D6-332	PTE6D33	GP2-333-332	PT6233	6TM-D33	
C74	.01	200	162-0611	P488-01	D6-103	PTE4S1	GP2-333-103	PT4U	4TM-S1	
C75	.1	400	162-0601	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C76	.001	400	160-06215	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C77	.001	400	160-06215	P686-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C78	.0047	600	162-06247	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	
C79	.0047	400	162-06247	P688-0047	D6-472	PTE6D47	GP2-333-472	PT6247	6TM-D47	Note 9
C80	.047	200	162-06147	P288-047	DF-503	PTE4S47		PT4147	2TM-S47	Note 5
C81	4700	500		1464-005		1DR5D5		MC8465	MS-25	
C82	330	500	183-0330	1459-00035						
C83	680	500	183-0680	1459-0001		2R5T7			MS-37	
C84	470	500	183-0470	1458-0005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C85	.047	400	160-04147	P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C86	.01	600	162-0611	P688-01	D6-103	PTE6S1	GP2-333-103	PT6U	6TM-S1	Note 4
C87	.22	200	160-0502	P488-22		PTE4P22		PT4025	2TM-P22	
C88	.22	600	160-0602	684-25		PTE6P25		PT6025	6TM-P25	Note 10
C89	68	2000	174-0068							
C90	500	20000	189-0015	HV20C	TV3-502	MM-C20T5	413-501		20DK-T5	
C91	500	20000	189-0015	HV20C	TV3-502	MM-C20T5	413-501		20DK-T5	
C92										Note 8
C93	.0047	600	162-06247							Note 8
C94	4700		166-4700D							Note 8

Note 1. Some Models use 10MFD in this application.
Note 2. Some Models use 20MFD in this application.
Note 3. Some Models use 200MFD in this application.
Note 4. Some Models use 4700MMF in this application. (part #168-4700D)
Note 5. Some Models use .01MFD in this application (part #162-0611)
Note 6. Some Models use .047MFD in this application (part #160-04147)
Note 7. Some Models use 470MMF in this application (part #163-0470)
Note 8. Not used in all Models.
Note 9. Some Models use .001MFD in this application (part #120-00215).
Note 10. Some Models use two .1MFD in this application (part #160-0604).
▲ Items C69A, C69B, C69C, R82A, R82B, R82C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SYLVANIA Part No.	IRC Part No.	CLAROSTAT Part No.	CENTRALAB Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	1000Ω	2	157-0020	QJ-472*				Contrast-Wire Wound-Panel
B	1 Meg							Volume & Switch - Rear
R2A	50KΩ		153-0017	Q11-123	AG-44-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-1	Not Req.	Attach to R2A
R3A	1 Meg		153-0016	Q11-137	AG-61-S	AB-59	U-54	Picture
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A
R4A	1.5Meg		153-0014	Q11-138	AG-83-S	AB-75	SU-56	Height
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	250KΩ		153-3001	WK-2500	AG-15-S	AB-7	SU-8	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	1.5Meg		153-0014	Q11-138	AG-83-S	AB-75	SU-56	Vert. Hold
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R6A

* CONCENTRIKIT EQUIVALENT-KIT K-3, BASE ELEMENTS & SHAFTS WU-108 & P3-405 (Panel)
B13-157 & R2-429(Rear) & SWITCH 76-1

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SYLVANIA Part No.	IRC Part No.	NOTES
R7	3900Ω			BTS-3900	
R8	2.2Meg				
R9	1.8Meg			BTS-1.8Meg	
R10	470Ω			BTS-470	
R11	10KΩ			BTS-10K	
R12	180KΩ			BTS-180K	
R13	10KΩ			BTS-10K	
R14	10KΩ			BTS-10K	
R15	4700Ω			BTS-4700	
R16	270Ω	2	183-0272	BTB-2700	Note 1,7
R17	68KΩ		181-0683	BTS-68K	Note 1
R18	1000Ω		181-0102	BTS-1000	
R19	270Ω		181-0273	BTS-2700	Note 2
R20	47Ω		181-0470	BTS-47	
R21	4700Ω		181-0472	BTS-4700	Note 8
R22	1000Ω		181-0102	BTS-1000	
R23	1000Ω		181-0102	BTS-1000	
R24	2700Ω		181-0272	BTS-2700	
R25	47Ω		181-0470	BTS-47	
R26	4700Ω		181-0472	BTS-4700	Note 8
R27	1000Ω		181-0102	BTS-1000	Note 9, 12
R28	1500Ω		181-0152	BTS 1500	
R29	180Ω		181-0181	BTS-180	Note 10
R30	1000Ω		181-0102	BTS-1000	Note 8, 13
R31	1000Ω		181-0102	BTS-1000	Note 9
R32	1500Ω		181-0152	BTS-1500	
R33	330Ω		181-0331	BTS-330	
R34	1000Ω		181-0102	BTS-1000	
R35	6800Ω		181-0682		Note 3
R36	10KΩ		181-0103	BTS-10K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SYLVANIA Part No.	IRC Part No.	NOTES
R37	12KΩ		181-0123	BTS-12K	
R38	4700Ω		181-0472	BTS-4700	
R39	220KΩ		181-0224	BTS-220K	
R40	220KΩ		181-0224	BTS-220K	
R41	470KΩ		181-0474	BTS-470K	
R42	47Ω		181-0470	BTS-47	
R43	6800Ω		181-0682	BTS-6800	
R44	12KΩ	2	183-0123	BTB-12K	
R45	12KΩ	2	183-0123	BTB-12K	
R46	12K Ω	2	183-0123	BTB-12K	
R47	100KΩ		181-0104	BTS-100K	
R48	1 Meg		181-0105	BTS-1 Meg	
R49	180KΩ		181-0184	BTS-180K	
R50	470KΩ		181-0474	BTS-470K	
R51	10KΩ-5%		181-01035	BTS-10K-5%	
R52	47KΩ		181-0473		
R53	100Ω		181-0101	BTS-100	
R54	1000Ω		181-0102	BTS-1000	
R55	100KΩ		181-0104	BTS-100K	
R56	68KΩ		181-0683	BTS-68K	
R57	15Meg		181-0156	BTS-15Meg	
R58	220KΩ		181-0224	BTS-220K	
R59	180KΩ		181-0184	BTS-180K	
R60	100KΩ		181-0104	BTS-100K	
R61	100KΩ		181-0104	BTS-100K	
R62	68Ω	1	182-0680		Note 1
R63	10KΩ	1	182-0103	BTA-10K	
R64	47Ω	½	181-0470		
R65	680Ω	2	183-0681	BTB-680	Note 1
R66	680Ω	2	183-0681	BTB-680	

RESISTORS (CONT.)

ITEM No	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SYLVANIA Part No	IRC Part No	NOTES
R67	33KΩ	½	181-0333	BTS-33K	Note 4
R68	470KΩ	½	181-0474	BTS-470K	Note 5
R69	1.2Meg	½	181-0125	BTS-1.2Meg	Note 6, 11
R70	330KΩ	½	181-0334	BTS-330K	
R71	120KΩ	½	181-0124	BTS-120K	
R72	22KΩ	½	181-0223	BTS-22K	
R73	2200Ω	½	181-0222	BTS-2200	
R74	6800Ω	2	183-0682	BTB-6800	
R75	3300Ω	1	182-0332	BTA-3300	
R76	100KΩ	½	181-0104	BTS-100K	Note 1
R77	22Meg	½	181-0226	BTS-22Meg	Note 1
R78	3300Ω	½	181-0332	BTS-3300	Note 1
R79	56KΩ	½	181-0563	BTS-56K	Note 1
R80	470KΩ	½	181-0474	BTS-470K	Note 1
R81	470KΩ	½	181-0474	BTS-470K	Note 1
R82 A	22KΩ	½	182-0102	BTA-1000	Note 7
B	8200Ω	½	▲190-0007	BTS-8200	
C	8200Ω	½		BTS-8200	
R83	33KΩ	½	181-0333	BTS-33K	
R84	220KΩ	½	181-0224	BTS-220K	
R85	1.5Meg	½	181-0155	BTS-1.5Meg	
R86	680KΩ	½	181-0684	BTS-680K	
R87	100KΩ	½	181-0104	BTS-100K	
R88	470KΩ	½	181-0474	BTS-470K	
R89	1000Ω	½	182-0102	BTS-1000	Note 1

ITEM No	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SYLVANIA Part No	IRC Part No	NOTES
R90	560Ω	½	181-0561	BTS-560	
R91	560Ω	½	181-0561	BTS-560	
R92	1000Ω	½	181-0102	BTS-1000	
R93	12KΩ	½	181-0123	BTS-12K	Note 1
R94	82KΩ-5%	½	181-08235	BTS-82K-5%	Note 1
R95	27KΩ	½	181-0273	BTS-27K	
R96	100KΩ	½	181-0104	BTS-100K	
R97	100KΩ	½	181-0104	BTS-100K	
R98	4.7Meg	½	181-0475	BTS-4.7Meg	
R99	4.7Meg	½	181-0475	BTS-4.7Meg	
R100	8200Ω	2	183-0821	BTS-820	Note 7
R101	5600Ω	1	182-0562	BTA-5600	
R102	120KΩ	½	181-0124	BTS-120K	
R103	68KΩ	½	181-0683	BTS-68K	
R104	3300Ω	½	181-0332	BTS-3300	
R105	470KΩ	½	181-0474	BTS-470K	
R106	100Ω	½	181-0101		
R107	100Ω	½	181-0101		
R108	18KΩ	2	183-0183	BTB-18K	
R109	1 Meg	½	183-0024		
R110	1 Meg	2	183-0024		
R111	1 Meg	2	183-0024		
R87	100KΩ	10	187-0013		
R113	220KΩ	1	181-0224	BTS-220K	
R114	1000Ω	1	181-0102	BTS-1000	Note 1

Note 1. Not used in all models.
Note 2. Some models may use a 2200Ω resistor in this application.
Note 3. Some models may use a 1000Ω resistor in this application.
Note 4. Some models may use a 10KΩ resistor in this application.
Note 5. Some models may use a 220KΩ resistor in this application.
Note 6. Some models may use a 2.2Meg resistor in this application.
Note 7. Some models may use a 6800 resistor in this application.
Note 8. Some models may use a 68000 resistor in this application.
Note 9. Some models may use a 12KΩ resistor in this application.
Note 10. Some models may use a 47Ω resistor in this application.
* Items R82A, R82B, R82C, C69A, C69B, C69C are combined in one unit.
Note 11. Some models may use a 470KΩ resistor in this application.
Note 12. Some models may use a 68000 resistor in this application.
Note 13. Some models may use a 4700Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: SYLVANIA Part No	STANCOR Part No	MERIT Part No	CHICAGO Part No	TRIAD Part No	RCA TYPE No.
T1	117VAC	650VCT	5VAC	6.3VAC	141-0034				R-49B8 ①	
	①1.82A	.220ADC	② 3A	②1.18A						
				SEC. 4						
				6.3VAC						
				②9.6A						

① Tap extra 6.3V 9A winding.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE		REPLACEMENT DATA: SYLVANIA Part No.	STANCOR Part No	MERIT Part No	CHICAGO Part No	TRIAD Part No	RCA TYPE No.	NOTES
	PRI.	SEC.							
T2	130Ω	750Ω	242-0002	A-8125	A-3003	TB0-5	A-97X	20ST9 ④	Vert. Osc. Trans.
T3	670Tap	31Ω	241-0007						Horiz. Output Trans.
	②27Ω	SEC. 2							
		3Ω							
		SEC. 3							
		0Ω							
		SEC. 4							
		0Ω							
T4	900Ω	9Ω	241-0008	A-8112	A-3036	TB0-9	A-99X ①	20ST2 ③	Vert. Output Trans.
T5A	27Ω		100-0009						Horiz. Deflection Coils
B	4Ω								Vert. Deflection Coils.
T6	2.3Ω		132-0002		MWC-2 ②				With Coil

① Drill one new mounting hole.
② Enlarge mounting hole.
③ Drill new mounting holes.
④ Mount on top of chassis.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC	RATING: DC RES PRI	RATING: DC RES SEC	REPLACEMENT DATA: SYLVANIA Part No	STANCOR Part No	MERIT Part No	CHICAGO Part No	TRIAD Part No	NOTES
T7	4.7KΩ	3.4Ω	293Ω	.46Ω	143-0023	A-3825 ⊥	A-3019	RO-304 ⊥	S-5Z	⊥ Drill one new mtg. hole

SPEAKER

ITEM No.	RATING: SIZE	RATING: FIELD	RATING: V C IMP	REPLACEMENT DATA: SYLVANIA Part No	JENSEN Part No.	QUAM Part No	NOTES
SP1A	6"	PM	3.4Ω	539-0602	ST-110 Mod. P6-V	6A21	⊥ Console models uses an 8" speaker
B	8"	PM	3.4Ω	539-0802 ①	ST-115 Mod. P8-U	8A31	

SYLVANIA MODELS 105, 200, 205, 250 Series (Ch. 1-504-1, -2, -4), 120, 126, 220, 225, 226, 275 Series (Ch. 1-510-1, -2, -4)

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SYLVANIA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. RF, Mixer Grid & Osc. Coils	0Ω						
L2	Neutr. Coil	0Ω						
L3	Coupling Coil	0Ω						
L4	RF Choke	0Ω						
L5	Conv. Plate	0Ω	0Ω					
L6	Fil. Choke	0Ω						
L7	1st. Video IF	0Ω		115-0001				Note 1
L8	Video IF Coupling	.1Ω		119-0002				Includes Trap
L9	2nd. Video IF	.2Ω	.2Ω	119-0003				Includes Trap
L10	Fil. Choke	0Ω		147-0014			4604	1.6 Microhenries
L11	3rd. V ideo IF	.2Ω	.2Ω	119-0004				Includes Trap
L12	4th. Video IF	.2Ω	.2Ω	119-0005				
L13	Cathode Trap	0Ω	0Ω	118-0011	20-1045		6219	
L14	5th. Video IF	.2Ω	.2Ω	126-0001				Includes 1N60B Crystal Det.
L15	Series Peaking Coil	1.4Ω		118-0010			4612	9.6 Microhenries
L16A	Series Peaking Coil	5.3Ω		131-2003	19-3125	TV-184	4644	135 Microhenries
B	Shunt Peaking Coil	7.3Ω			19-3250	TV-185	6181	250 Microhenries, part of L16A
L17A	Series Peaking Coil	4.4Ω		131-2008	19-3093	TV-181	6177	95 Microhenries
B	Shunt Peaking Coil	9Ω			19-3300		4565	330 Microhenries, part of L17A
L18	4.5MC Trap	5.5Ω		130-0001	20-1005 *	TV-151	1470	
L19	Sound IF	5.5Ω		130-0001	17-3400	TV-151	1469	
L20	Ratio Det.	11.5Ω	1.6ΩCT	128-0008	17-3497	TV-115	6205	Tertiary Winding - .8Ω
L21	Horiz. Osc.	29Ω		132-0001	19-1575	TV-163 ■	6210 ■	
L22	RF Choke	1.4Ω		118-0010			4612	Note 1, 9.6 Microhenries
L23	RF Choke	1.4Ω		118-0010			4612	9.6 Microhenries
L24	RF Choke	1.4Ω		118-0010			4612	9.6 Microhenries

Note 1. Not used in all Models.
* Disconnect capacitor in parallel.
■ Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA SYLVANIA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L25	.220ADC	39.5Ω	1.1 Hy.	145-0004	C-2326 ①	C-2996	TR-1733 ①	C-17X

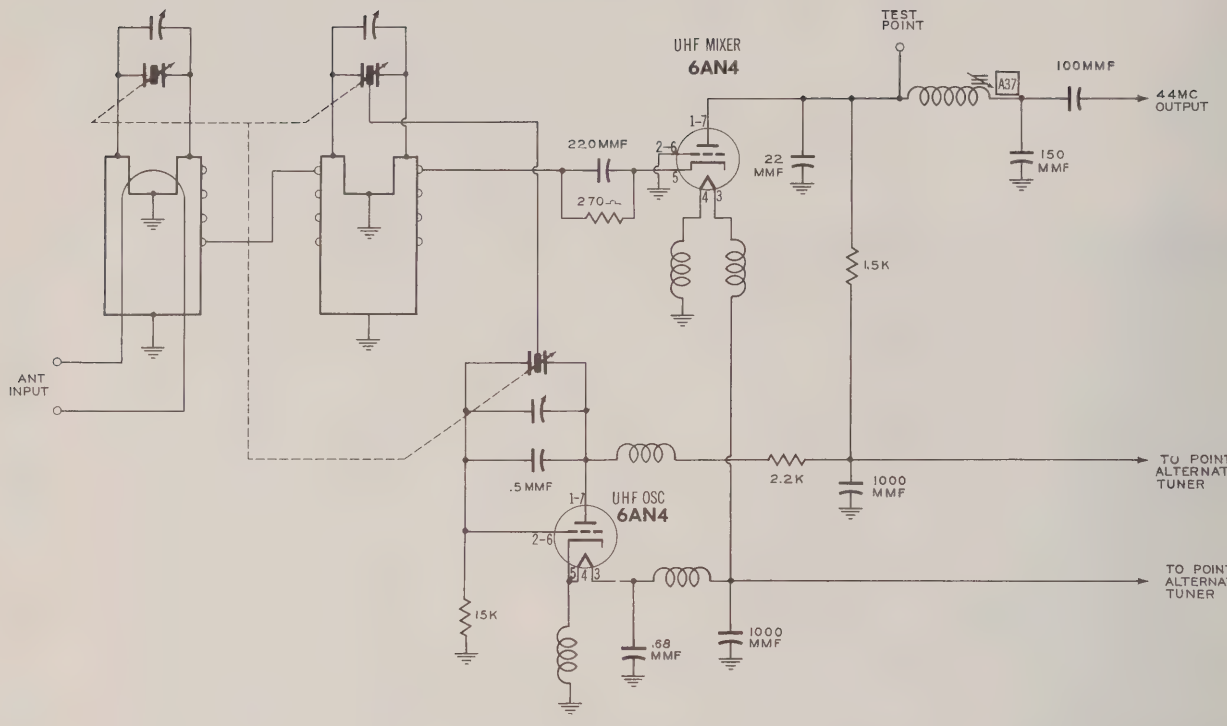
① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA SYLVANIA PART No. FUSE	SYLVANIA PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG (Slo/Blo)	1/4A @125V	191-0014	487-0008	313.250	357001	MDL 1/4	4406

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M2A	RF Tuner	323-0027	VHF less UHF Drive Components, Chassis 1-504-1, 1-504-2
B	RF Tuner	323-0030	VHF (Includes UHF Drive Components), Ch. 1-504-1, 1-504-2
C	RF Tuner	323-0018	VHF (Less UHF Drive Components) Ch. 1-510-1
D	RF Tuner	323-0025	VHF (Includes UHF Drive Components) Ch. 1-510-1
E	RF Tuner	323-0036	VHF Ch. 1-504-4
F	RF Tuner	323-0035	VHF Ch. 1-510-4
M3A	RF Tuner	323-0021	UHF Ch. 1-504-2, 1-510-2
B	RF Tuner	323-0019	UHF Ch. 1-504-4, 1-510-4
M4	Switch Assy.	577-0004	VHF-UHF Selector Ch. 1-504-4, 1-510-4
M5	Switch	572-0004	AGC-Area Selector Ch. 1-504-4, 1-510-4
M6	Bias Regulator		Horiz. Output (Type 40A1)
M7	Focus Magnet	400-0014	Includes centering device 1-504-1, 1-504-2, 1-510-1, 1-510-1, 1-510-2, 1-504-4, 1-510-4
M8	Ion Trap	400-0013	Ch. 1-504-1, 1-504-2, 1-510-1, 1-510-2, 1-504-4, 1-510-4
M9	Correction Magnet	400-0016	Not used in all Models.
B2	Trimmer Cap.	172-0032	Horiz. Drive, 70-470MMF
B4	Trimmer Cap.	172-0032	Sync Balancing 70-470MMF
	Safety Glass	710-0011	Ch. 1-504-1, 1-504-2, 1-504-4
	Safety Glass	710-0009	Ch. 1-510-1, 1-510-2, 1-510-4
	Mask	716-0003	21" Ch. 1-510-1, 1-510-2, 1-510-4
	Mask	716-0005	17" Ch. 1-504-1, 1-504-2, 1-504-4
	Knob	744-0023	Contrast (Inner), Ch. 1-504-1, 1-504-2, 1-504-4, 1-510-1, 1-510-2, 1-510-4
	Knob	740-0024	Fine Tuning Ch. 1-504-1, 1-504-2, 1-504-4, 1-510-1, 1-510-1, 1-510-2, 1-510-4
	Knob	743-0022	Dial Assy. (outer) Ch. 1-504-1, 1-504-2, 1-504-4, 1-510-1, 1-510-2, 1-510-4
	Knob	744-0022	Off/On Volume (outer) Ch. 1-504-1, 1-504-2, 1-504-4, 1-510-1, 1-510-2, 1-510-4
	Dial (UHF)	722-0030	Ch. 1-504-2, 1-510-2
	Dial (UHF Dummy)	722-0028	Ch. 1-510-1, 1-504-1, 1-504-4



ALTERNATE UHF TUNER USED ONLY WITH
ALTERNATE VHF TUNER ON CHASSIS 1-504-1, 1-504-2, 1-510-1, & 1-510-2

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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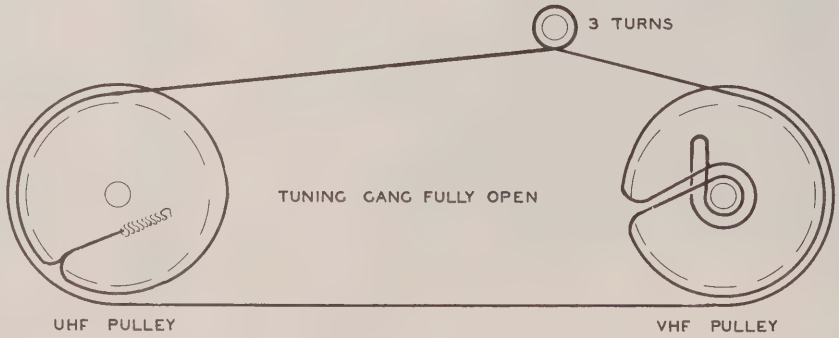
ALTERNATE UHF TUNER SCHEMATIC



UHF DRIVE CORD STRINGING

TROUBLE SHOOTING AIDS (CONT.)

VIDEO

SOUND BARS

Check adjustment of the 4.5 Meg (A15). Check setting of local oscillator and alignment of IF stages.

POOR RESOLUTION

Check alignment of tuner and IF stages. Substitute V8 and check associated components.

POOR CONTRAST

Check waveform W2;

If not satisfactory,	If satisfactory,
Substitute V8 and check associated components.	Check picture tube.

AUDIO

WEAK OR NO SOUND

Substitute V9, V10, V11 and V12. Check L19 and C53.

BUZZ

Substitute V10. Check adjustment of ratio detector secondary slug for minimum buzz.

DISTORTED

Check audio stages using audio signal generator;

If not distorted,	If distorted,
Substitute V9 and V10. Check alignment of sound IF and discriminator.	Substitute V11 and V12. Check associated components.

POWER

SMALL RASTER, WEAK SOUND

Substitute V23. Check filter components. Check for short in B+ circuit.

DIM PICTURE

Follow procedure outlined under "SMALL RASTER, WEAK SOUND".

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check waveform W14;

If not satisfactory,	If satisfactory,
Substitute V18. Check associated components.	Check waveform W15.

Check waveform W15;

If not satisfactory,	If satisfactory,
Substitute V18 and check circuit components.	Substitute V19, V20 and M6. Check associated components.

WEAK HIGH VOLTAGE

If substitution V18, V 19, V20, V21, V22 and V23 does not correct trouble, follow procedure outlined under "LOSS OF HIGH VOLTAGE".

BLOOMING

If substitution of V18, V19, V20, V21, V22 and V23 does not correct trouble, follow procedure outlined under "LOSS OF HIGH VOLTAGE".

REMOVAL OF HIGH VOLTAGE SUB CHASSIS

Unplug deflection yoke from the top of the hi-voltage cage, the high voltage lead to anode of picture tube, the plate cap lead of the 6BQ6 and the cathode of the 6V3. Compress retaining spring holding the horizontal deflection coil receptical and slide receptical out. Unplug horizontal scanning and hi-voltage plug under the hi-voltage sub. chassis. Remove screw in corner of the bakelite chassis and take out.

GENERAL

NO SOUND, NO PICTURE, NO SNOW

Substitute V4, V5, V6, V7 and V8. Check associated components.

SNOW BUT NO PICTURE OR SOUND

Substitute V2 and V3. Check tuner components.

SNOWY PICTURE, GOOD SOUND (IN STRONG SIGNAL AREAS)

Substitute Video IF tubes and components.

INTERMITTENT STREAKS

Check high voltage circuit for corona leakage and arcing.

Symptoms shown above are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

For touch-up adjustment of RF Tuner Oscillator adjustments, it is necessary to remove the chassis from the cabinet. (See Disassembly instructions).

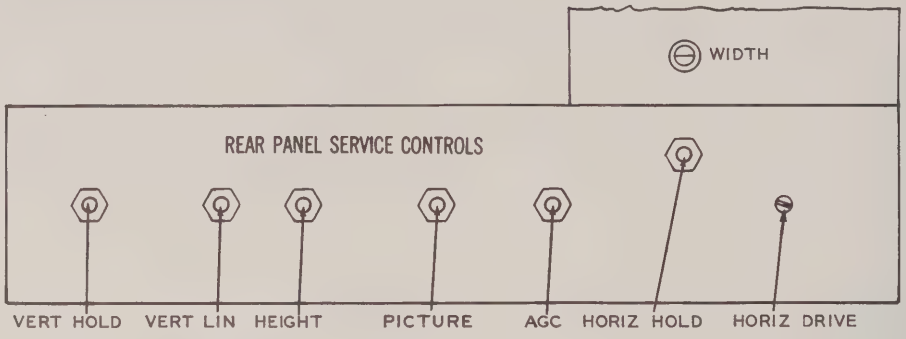
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (L21) until, picture synchronizes horizontally . (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector buzz, adjust the ratio detector secondary (L20) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focuing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

BUILT-IN ANTENNA TUNING

Built-in antenna can be adjusted from the rear of cabinet. Adjust for a picture of maximum contrast and minimum ghost.

ANTI-PIN CUSHION CORRECTION

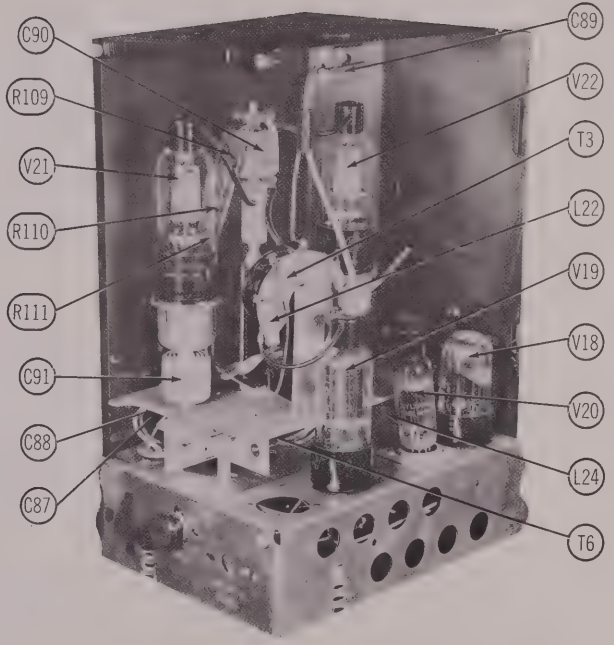
Reduce the picture size so that sides of the raster are visible, and position the magnets so that all sides are straight lines and the corners are at right angles.

SPECIAL ADJUSTMENTS - SYNC BALANCING ADJUSTMENT

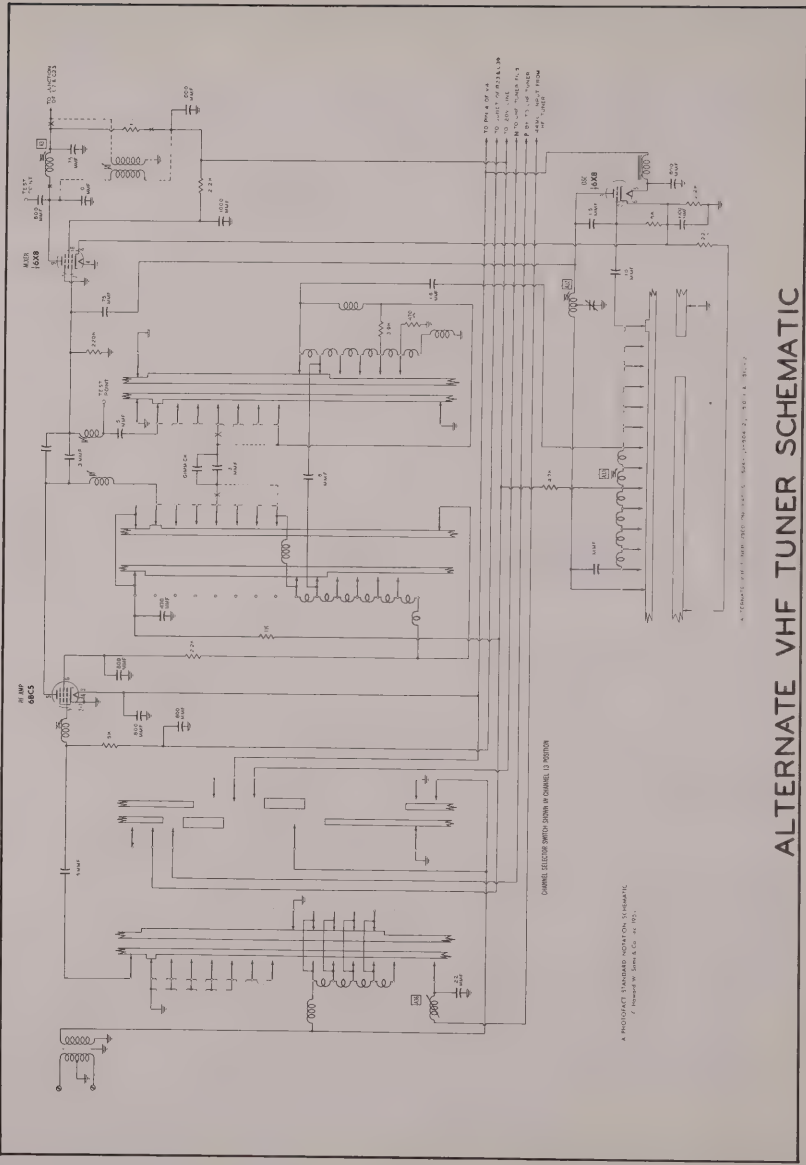
(Not accessible without removal of chassis.) See Horiz. Sweep Circuit Adj u s tments on page 13.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 6 wood screws. Remove rear cover.
3. Disconnect built-in antenna, and speaker plug.
4. Remove 4 chassis bolts. Loosen 2 nuts at top of CRT. Re move chassis.
5. Remove 2 speaker nuts . Remove speaker (Not necessary for chassis removal).



HIGH VOLTAGE COMPARTMENT



ALTERNATE VHF TUNER SCHEMATIC

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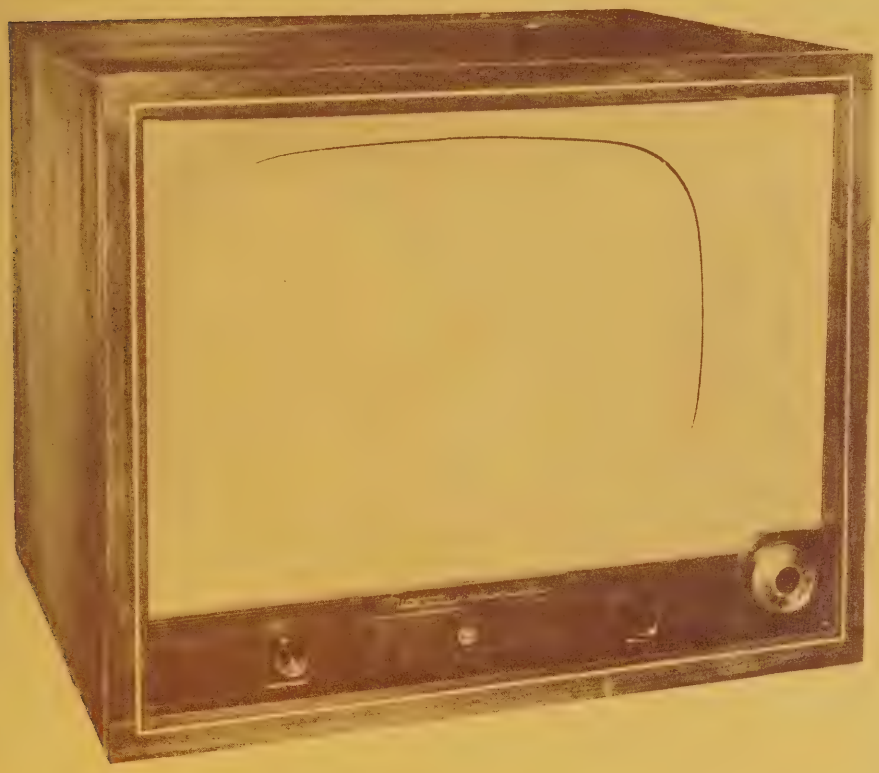

MODEL H-740T21

WESTINGHOUSE MODELS H-737T17 (Ch. V-2232-2), H-740T21, H-742K21, H-743K21 (Ch. V-2233-1), H-750T21 (Ch. V-2233-3), H-751T21, H-752T21 (Ch. V-2233-2), H-753K21 (Ch. V-2233-3), H-754K21, H-755K21, H-756K21, H-757K21, H-758K21, H-759K21, H-760T21, H-760TU21, H-761T21, H-761TU21 (Ch. V-2233-2)

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WESTINGHOUSE MODELS H-737T17 (Ch. V-2232-2), H-740T21, H-742K21, H-743K21 (Ch. V-2233-1), H-750T21 (Ch. V-2233-3), H-751T21, H-752T21 (Ch. V-2233-2), H-753K21 (Ch. V-2233-3), H-754K21, H-755K21, H-756K21, H-757K21, H-758K21, H-759K21, H-760T21, H-760TU21, H-761T21, H-761TU21 (Ch. V-2233-2)

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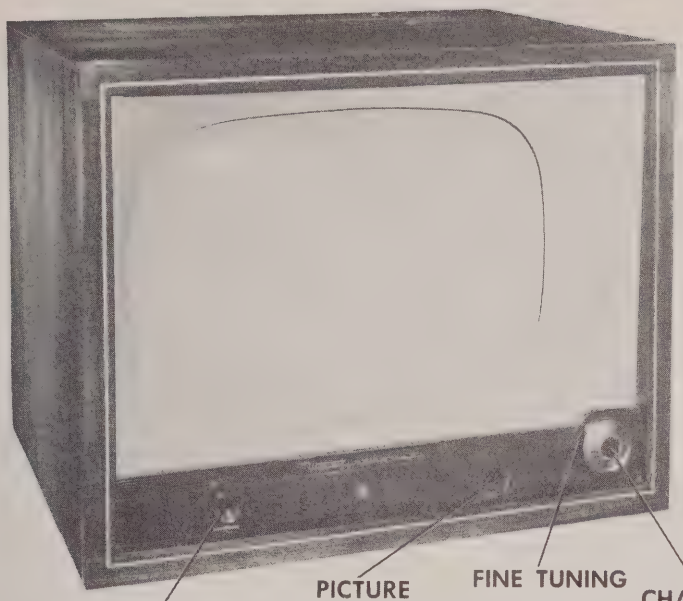

WESTINGHOUSE MODEL H-740T21

TRADE NAME	WESTINGHOUSE	MODEL	CHASSIS
		H-737T17	V-2232-2
		H-740T21, H-742K21, H-743K21	V-2233-1
		H-750T21	V-2233-3
		H-751T21, H-752T21	V-2233-2
		H-753K21	V-2233-3
		H-754K21, H-755K21, H-756K21 H-757K21, H-758K21, H-759K21 H-760T21, H-760TU21, H-761T21 H-761TU21	V-2233-2
MANUFACTURER	Westinghouse Electric Corp., Television -Radio Div., Sunbury, Pa.		
TYPE SET	Television Receiver		
TUBES	Twenty-two		
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATING 1.92 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

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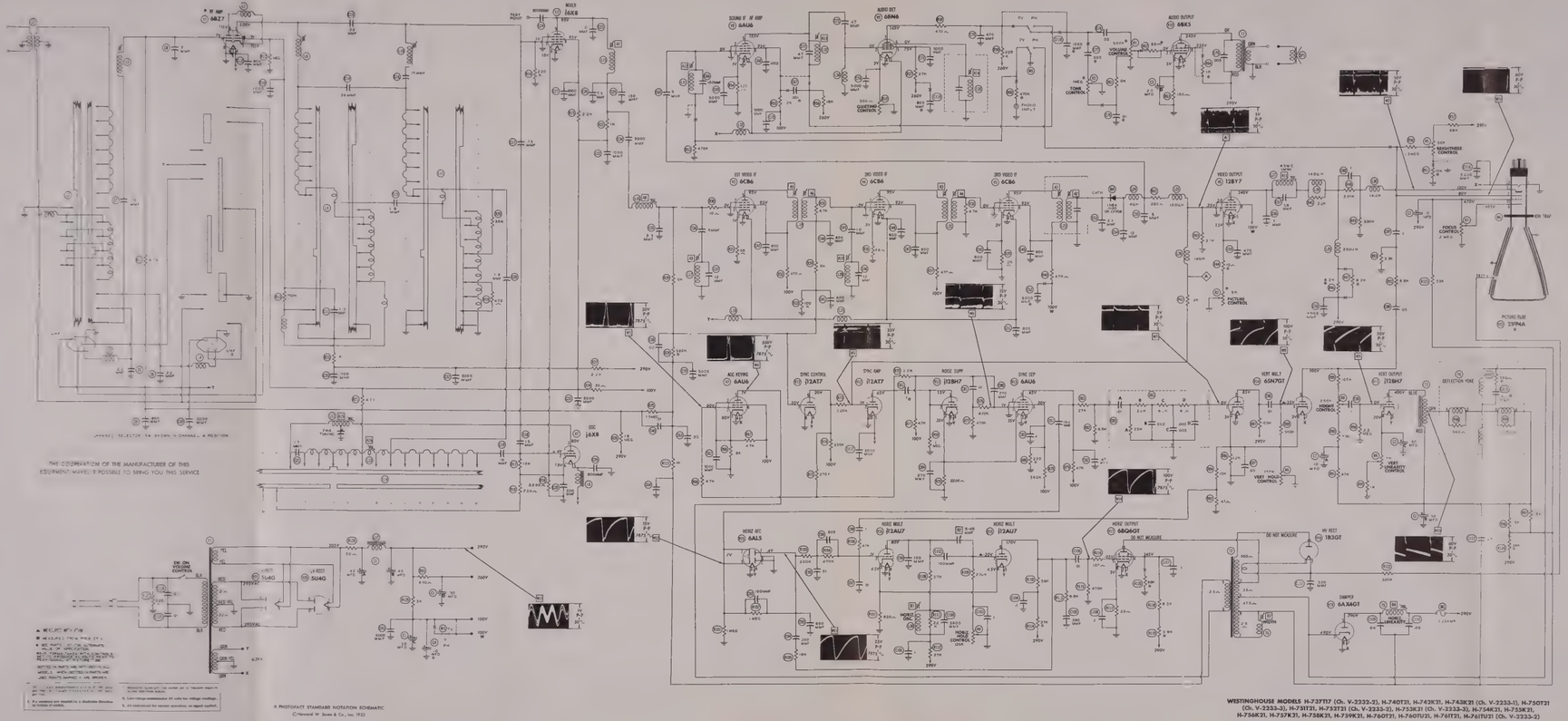

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MADE IT POSSIBLE TO BRING YOU THIS SERVICE

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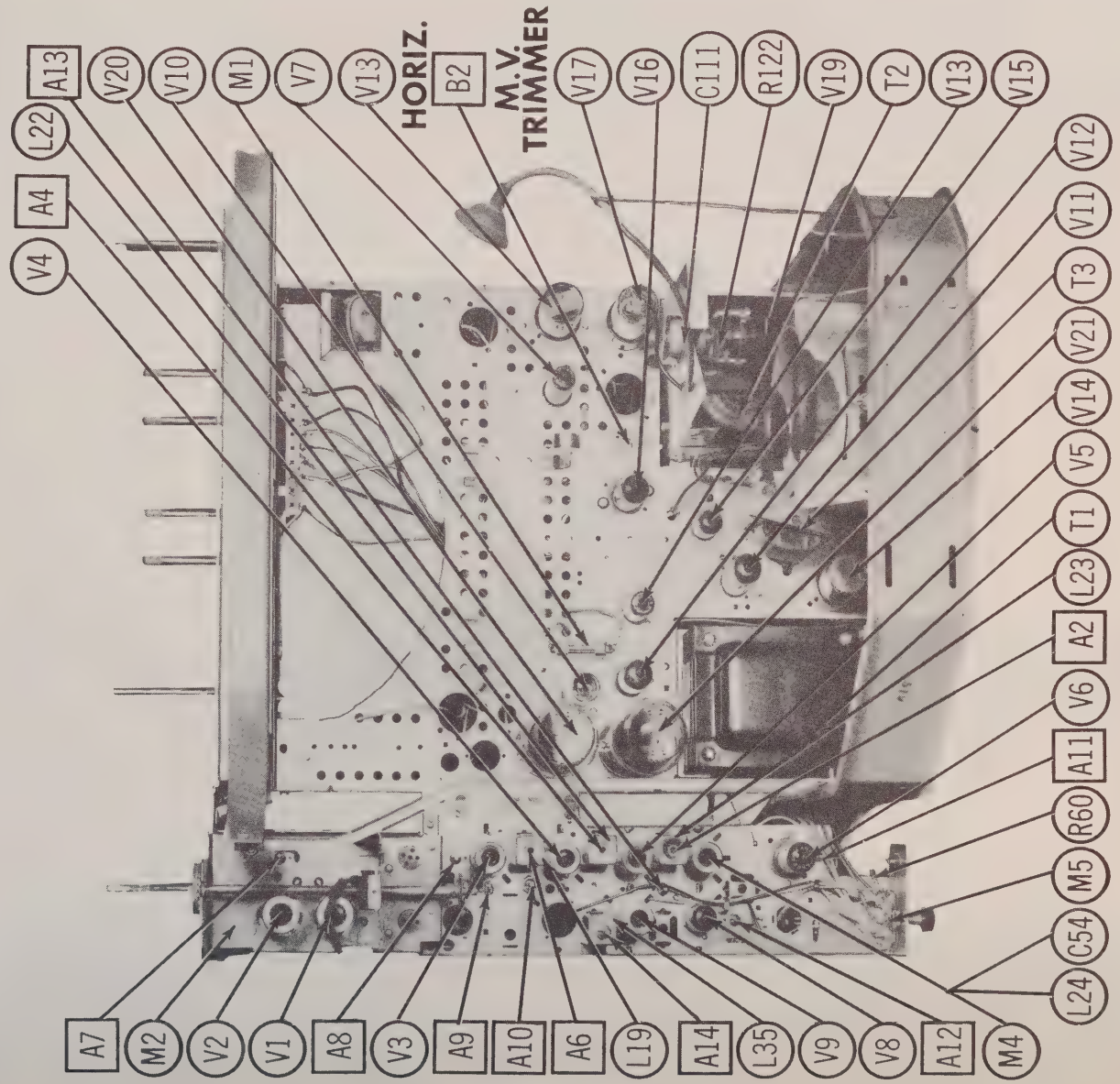
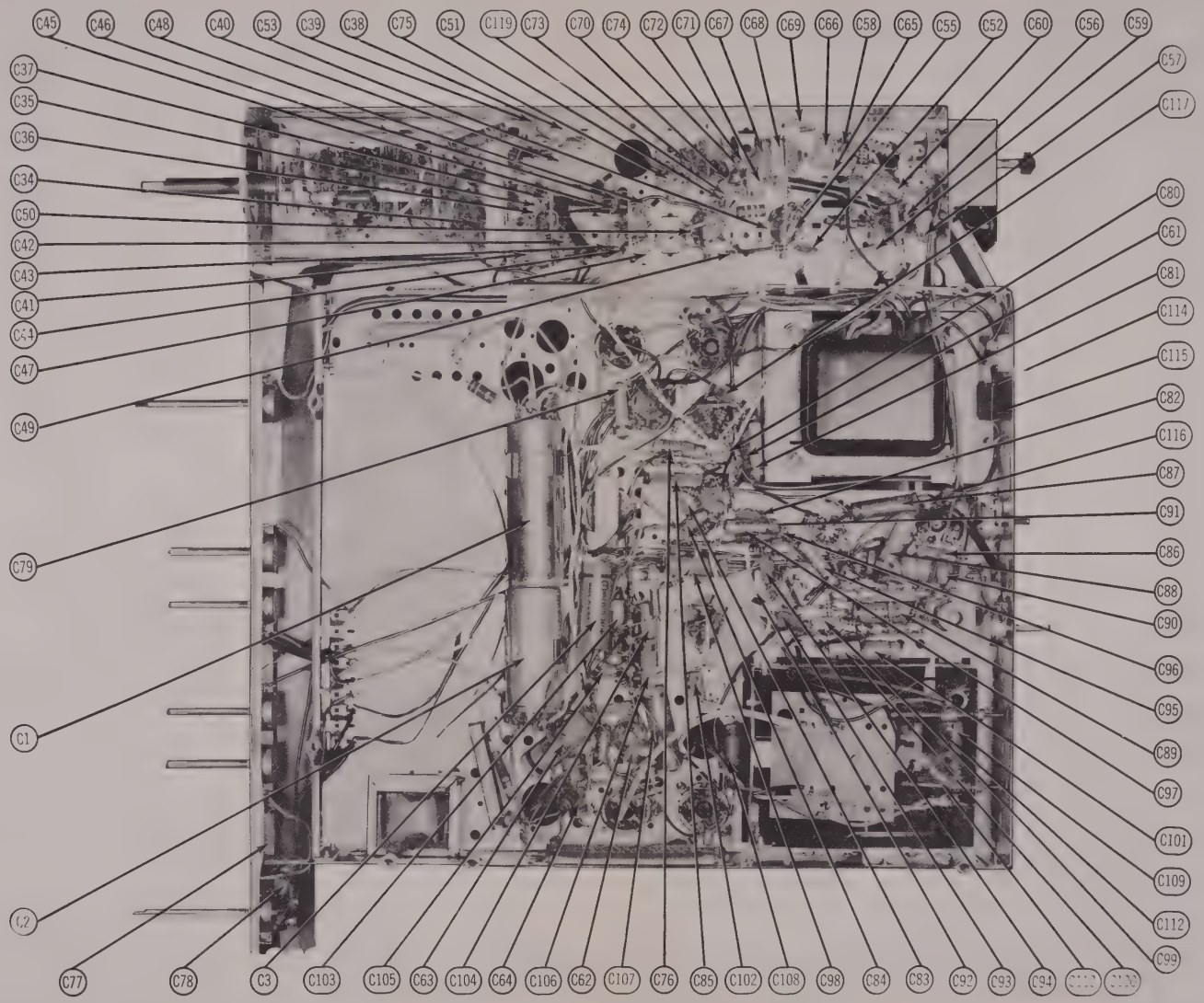
WESTINGHOUSE MODELS H-737T17 (Ch. V-2232-2), H-740T21, H-742K21, H-743K21 (Ch. V-2233-1), H-750T21 (Ch. V-2233-3), H-751T21, H-752T21 (Ch. V-2233-2), H-753K21 (Ch. V-2233-3), H-754K21, H-755K21, H-756K21, H-757K21, H-758K21, H-759K21, H-760T21, H-760TU21, H-761T21, H-761TU21 (Ch. V-2233-2)

WESTINGHOUSE MODELS H-737T17 (Ch. V-2232-2), H-740T21, H-742K21, H-743K21 (Ch. V-2233-1), H-750T21 (Ch. V-2233-3), H-751T21, H-752T21 (Ch. V-2233-2), H-753K21 (Ch. V-2233-3), H-754K21, H-755K21, H-756K21, H-757K21, H-758K21, H-759K21, H-760T21, H-760TU21, H-761T21, H-761TU21 (Ch. V-2233-2)

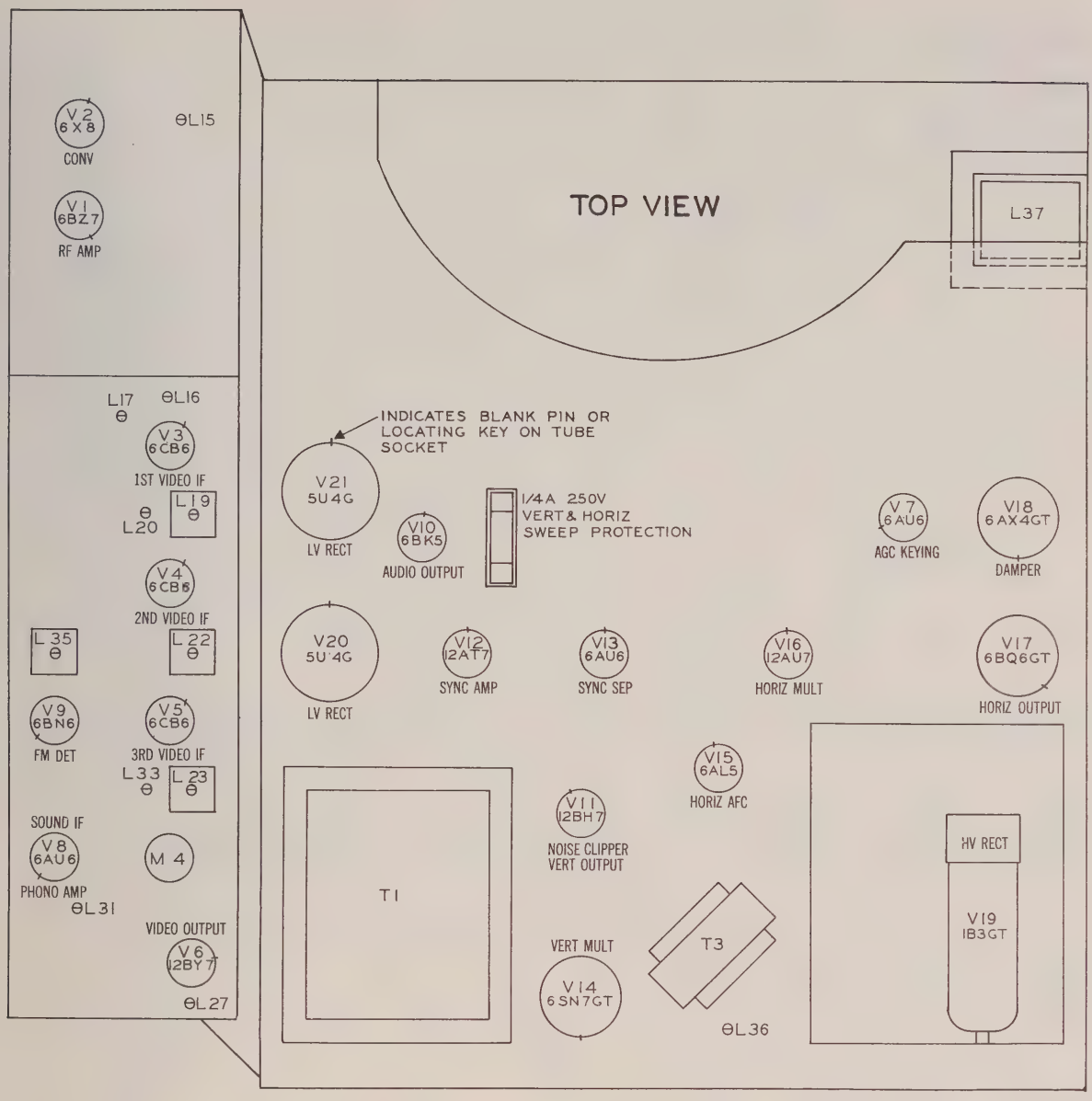


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V20, V21

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster -V2, V3, V4, V5
No pic, no sound, has snow - V1, V 2, V3
No pic, has sound, has raster - V6, V22
Has pic, no sound -V8, V9, V10
Overloaded picture - V7

SYNC FAILURE
No vert. sync - V13, V14
No horiz. sync - V13, V15, V16
No vert. or horiz. sync - V11, V12, V13

SWEEP FAILURE
No raster, has sound - V16, V17, V18, V19, V22 Fuse (M1)
No vertical deflection - V11, V14
Poor vert. linearity or foldover - V11, V14
Poor horiz. linearity or foldover - V16, V17, V18
Narrow picture - V16, V17, V18, V19, V20, V21
Vert. off freq. - V13, V14
Horiz. off freq. - V13, V15, V16

WESTINGHOUSE MODELS H-737T17 (Ch. V-2232-2), H-740T21, H-742K21, H-743K21 (Ch. V-2233-1), H-750T21 (Ch. V-2233-3), H-751T21, H-752T21 (Ch. V-2233-2), H-753K21 (Ch. V-2233-3), H-754K21, H-755K21, H-756K21, H-757K21, H-758K21, H-759K21, H-760T21, H-760TU21, H-761T21, H-761TU21 (Ch. V-2233-2)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Connect the negative lead of a 9 volt bias source to the ungrounded side of C63. Connect the positive lead to chassis.
Remove the RF amplifier tube 6BZ7, V1, from its socket.
The scope should be connected to the proper alignment point through a decoupling network consisting of a 47KΩ resistor in series with the hot lead and a 470MMF capacitor across the vertical input of the scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to pin 1 (grid) of 6CB6 (V5). Low side to chassis near V5. Use short leads.	44MC (10MC Swp)	42.25MC 43.0MC 44.0MC 45.0MC 45.75MC	13	Vert. amp.to point (A). Low side to chassis.	A1, A2	Attach a detuning clip to pin 5 (plate) of V4. (Caution B+). Adjust A1 for maximum gain at 44MC. Adjust A2 for a symmetrical response curve with markers as shown in Fig.1.
2.	"	High side to pin 1 (grid) of 6CB6 (V4). Low side to chassis near V4.	"	"	"	"	A3, A4	Move detuning clip to pin 5 (plate) of V3. (Caution B+). Adjust A3 for maximum gain at 44MC. Adjust A4 for a symmetrical response curve as in Fig.2.
3.	"	High side to pin 1 (grid) of 6CB6 (V3). Low side to chassis near V3.	"	"	"	"	A5, A6	Remove detuning clip from V3. Adjust A5 for maximum gain at 44MC. Adjust A6 for a symmetrical response curve as in Fig.3. If difficulty is experienced in adjusting A5 and A6 as described, preset A10 fully counter-clockwise and repeat adjustment of A5 and A6
4.	"	High side to an ungrounded tube shield floating over converter tube, V2. Low side to chassis.	"	"	"	"	A7, A8	Turn A9 completely clockwise. Adjust A7 for maximum response. Adjust A7 for maximum response. Adjust A8 for symmetrical response.
5.	"	"	"	41.25MC	"	"	A9	Adjust for MINIMUM marker response.
6.	"	"	"	42.25MC 43.0MC 44.0MC 45.0MC 45.75MC	"	"	A7, A8	Readjust for response similar to Fig. 4.
7.	"	High side to pin 1 (grid) of 6CB6 (V3). Low side to chassis.	Not used.	47.25MC (400% Mod)	"	"	A10	Adjust for MINIMUM 400% indication on scope. In areas where adjacent channel interference is not a problem A10 can be adjusted to , and left at fully counter-clockwise position.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	13	DC probe thru detector (Fig. 5) to pin 11 (cathode) of picture tube. Common to chassis.	A11	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (15KC Swp)	4.5MC	13	Vert. Amp. across across volume control.	A12, A13	Set generator output to give minimum useful indication on scope. Adjust A12 and A13 for maximum response centered about 4.5MC.
10.	"	"	"	"	"	"	A14	Set generator to give a strong signal and adjust A14 for maximum response at 4.5MC.
11.	"	"	Not used	4.5MC (400% Mod)	"	"	R10	Starting with a very low signal input gradually increase the level, at the same time rotating the quieting control, R10 back and forth until the point where the AM output on scope dips to zero with a rise on each side as R10 is rotated. Set R10 for zero output at this signal level.

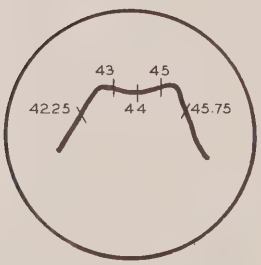


FIG.1

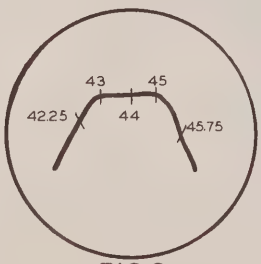


FIG.2

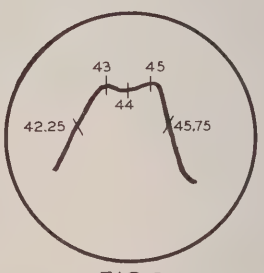


FIG.3

ALIGNMENT INSTRUCTIONS (CONT.)

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SOUND IF ALIGNMENT USING A TV SIGNAL

Replace RF amplifier tube, V1, if not previously replaced.
Tune receiver to a TV station and connect an attenuator between receiver and antenna so that the signal input to receiver can be varied from weak to strong.
Set the quieting control (R10) to the middle of its range.
Adjust A12 and A13 for maximum program sound. If peaks appear at two different slug settings use the one at farthest counter clockwise position.
Reduce the input signal to lowest usable level and check settings of A12 and A13.
Apply a strong signal and adjust A14 for maximum program sound. If two widely separated peaks appear use the one with A14 furthest counter clockwise.
If two peaks appear within a narrow range of adjustment, the signal strength being applied is too low or the quieting control is improperly adjusted.
Apply a very weak signal and adjust R10 for minimum noise. Do not leave R10 at maximum counter clockwise position.

OSCILLATOR ALIGNMENT

Connect the bias battery as under Video IF Alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (A). Low side to chassis.	A15	Adjust to place video marker at 50% on high frequency side of IF response curve as in Fig. 6.
13.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		Check high band channels for correct video marker placement as in Fig. 6. If necessary make slight readjustment of A15 for best compromise on all channels.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
14.	"	"	85MC (10MC Swp)	83.25MC 87.75MC	6	"	A16	Adjust to place video marker at 50% on high frequency side of IF response curve as in Fig. 6.
15.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"		Check low band channels for correct video marker placement as in Fig. 6. If necessary make slight readjustment of A16 for best compromise on all channels.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

RF ALIGNMENT

The RF and Mixer portion of this receiver has been properly aligned at the factory and is very stable.
Alignment of this portion should not be required in the field.

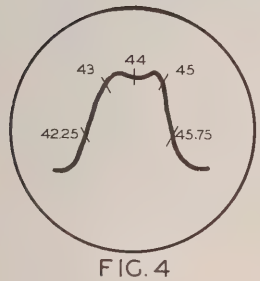


FIG. 4

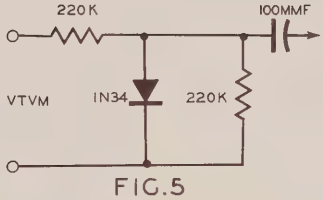


FIG. 5

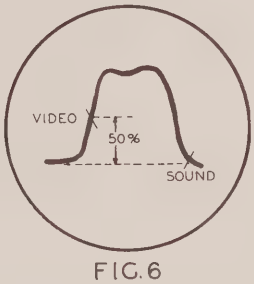


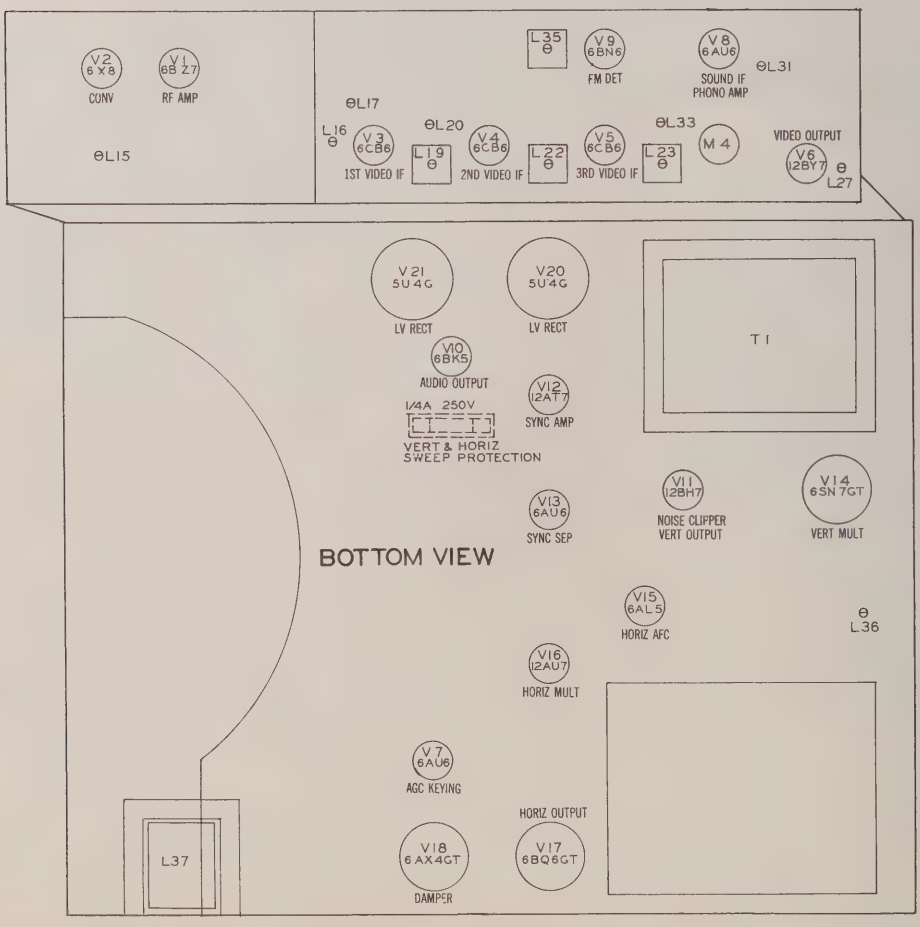
FIG. 6

WESTINGHOUSE MODELS H-737T17 (Ch. V-2232-2), H-740T21, H-742K21, H-743K21 (Ch. V-2233-1), H-750T21 (Ch. V-2233-3), H-751T21, H-752T21 (Ch. V-2233-2), H-753K21 (Ch. V-2233-3), H-754K21, H-755K21, H-756K21, H-757K21, H-758K21, H-759K21, H-760T21, H-760TU21, H-761T21, H-761TU21 (Ch. V-2233-2)

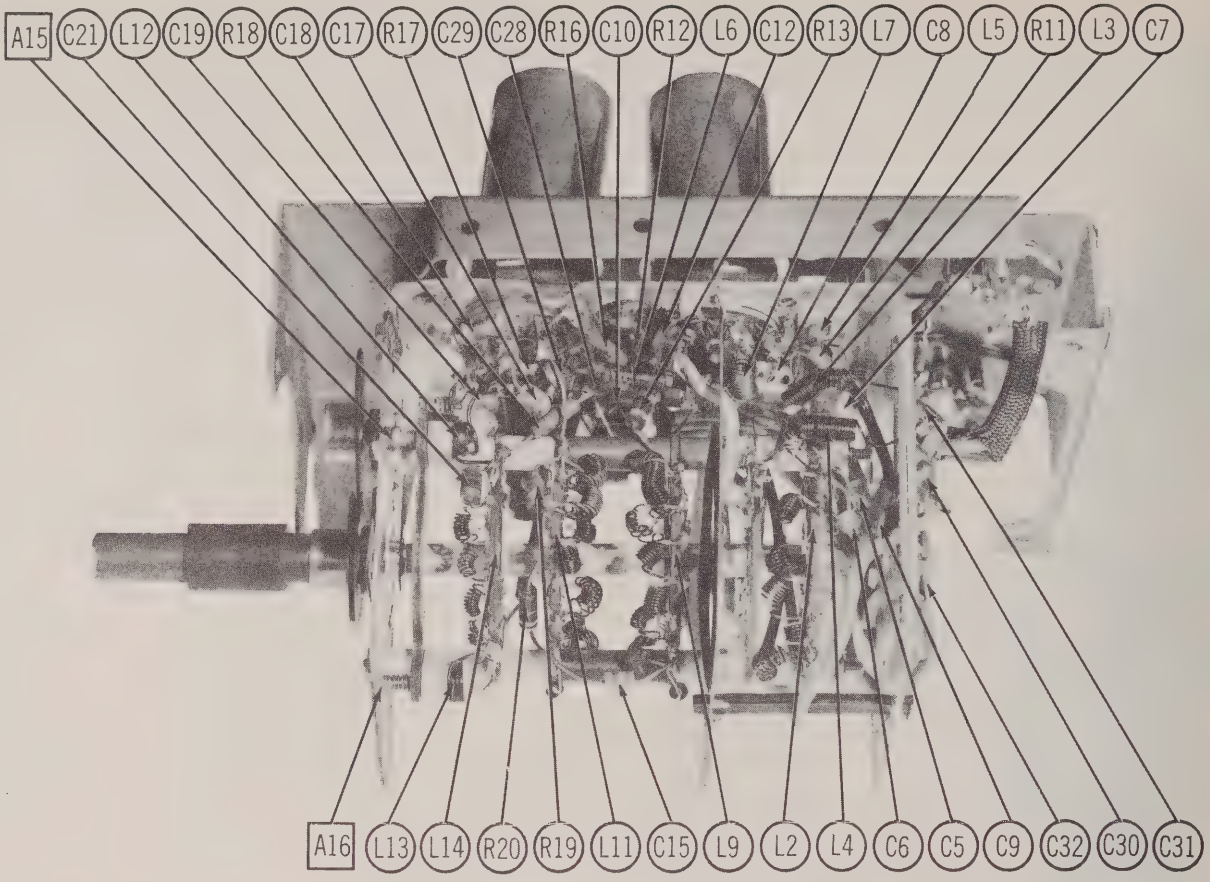
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BZ7	†3.3KΩ	†435KΩ	INF	.1Ω	0Ω	INF	2 Meg	0Ω	0Ω
V 2	6X8	0Ω	15KΩ	‡8KΩ	0Ω	.1 Ω	200Ω	220KΩ	†5.3KΩ	†4.3KΩ
V 3	6CB6	110KΩ	68Ω	.1Ω	0Ω	†3.6KΩ	†3.6KΩ	0Ω		
V 4	6CB6	110KΩ	68Ω	.1Ω	0Ω	†3.6KΩ	†3.6KΩ	0Ω		
V 5	6CB6	.4Ω	150Ω	.1Ω	0Ω	†3.6KΩ	†3.6KΩ	0Ω		
V 6	12BY7	110Ω	3.3KΩ	0Ω	.1Ω	.1Ω	0Ω	†4.2KΩ	†3.1KΩ	0Ω
V 7	6AU6	†15KΩ	11KΩ	.1Ω	0Ω	650KΩ	†3.1KΩ	11KΩ		
V 8	6AU6	.7Ω	0Ω	.1Ω	0Ω	†19KΩ	†4.3KΩ	120Ω		
V 9	6BN6	340Ω	9.5Ω	.1Ω	0Ω	†28KΩ	5.5Ω	†220KΩ		
V 10	6BK5	†450Ω	10Ω	160Ω	.1Ω	0Ω	180Ω	160Ω	†1.1KΩ	†770Ω
V 11	12BH7	1 Meg	1 Meg	2.2KΩ	.1Ω	.1Ω	‡9.1KΩ	2.2Meg	2.5Meg	0Ω
V 12	12AT7	†10KΩ	15KΩ	0Ω	.1Ω	.1Ω	†95KΩ	100KΩ	0Ω	0Ω
V 13	6AU6	940KΩ	0Ω	0Ω	.1Ω	†26KΩ	†145KΩ	2.2KΩ		
V 14	6SN7GT	61KΩ	†100KΩ	1KΩ	800KΩ	‡450KΩ	1KΩ	.1Ω	0Ω	
V 15	6AL5	1 Meg	0Ω	0Ω	.1Ω	1 Meg	0Ω	2 Meg		
V 16	12AU7	†54KΩ	2.7Meg	820Ω	.1Ω	.1Ω	†83KΩ	300KΩ	820Ω	0Ω
V 17	6BQ6GT	INF	0Ω	INF	†11KΩ	470KΩ	INF	.1Ω	33Ω	Top Cap ‡330Ω
V 18	6AX4GT	INF	INF	52KΩ	INF	†115Ω	INF	.1Ω	0Ω	
V 19	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ‡930Ω
V 20	5U4G	INF	13KΩ	INF	21Ω	INF	22Ω	INF	13KΩ	
V 21	5U4G	INF	13KΩ	INF	21Ω	INF	22Ω	INF	13KΩ	
V 22	21FP4A	0Ω	†1.5Meg	Pin 6 ‡80KΩ	Pin 10 ‡33KΩ	Pin 11 †170KΩ	Pin 12 .1Ω			

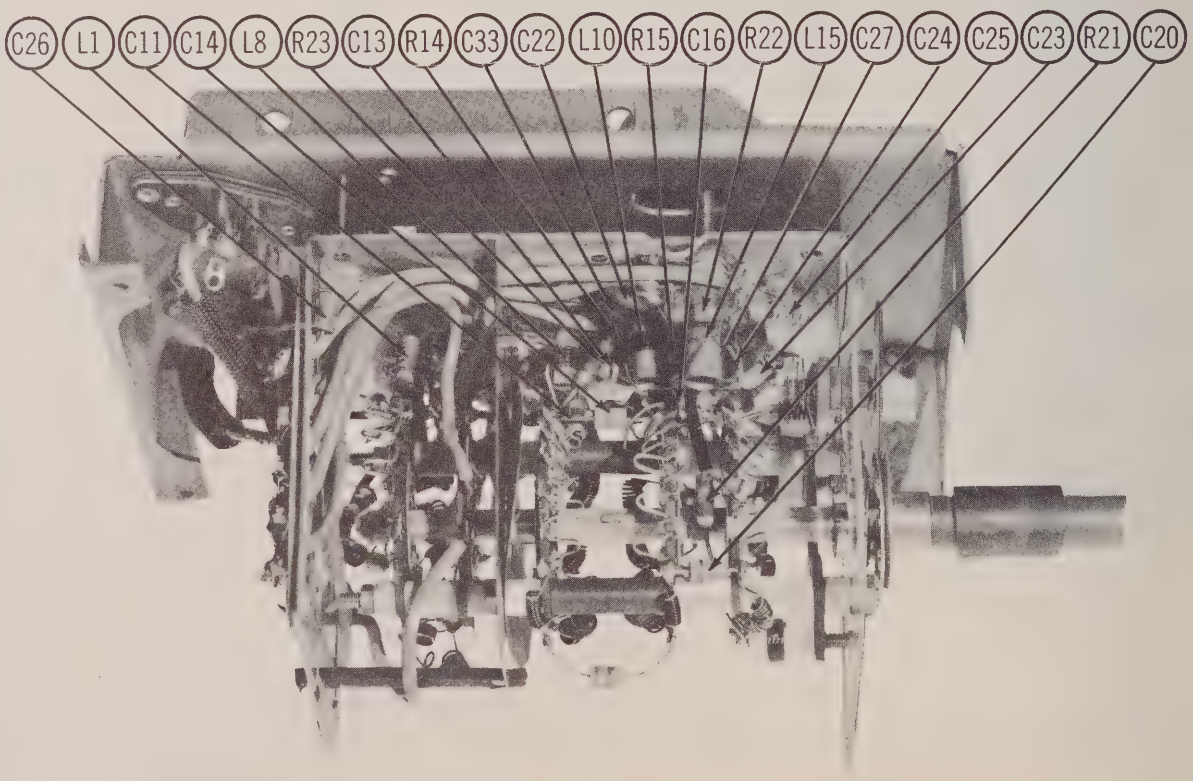
† MEASURED FROM PIN 8 OF V20.
‡ MEASURED FROM PIN 3 OF V18.
ALL MEASUREMENTS TAKEN IN "TELEVISION (VHF)" POSITION.



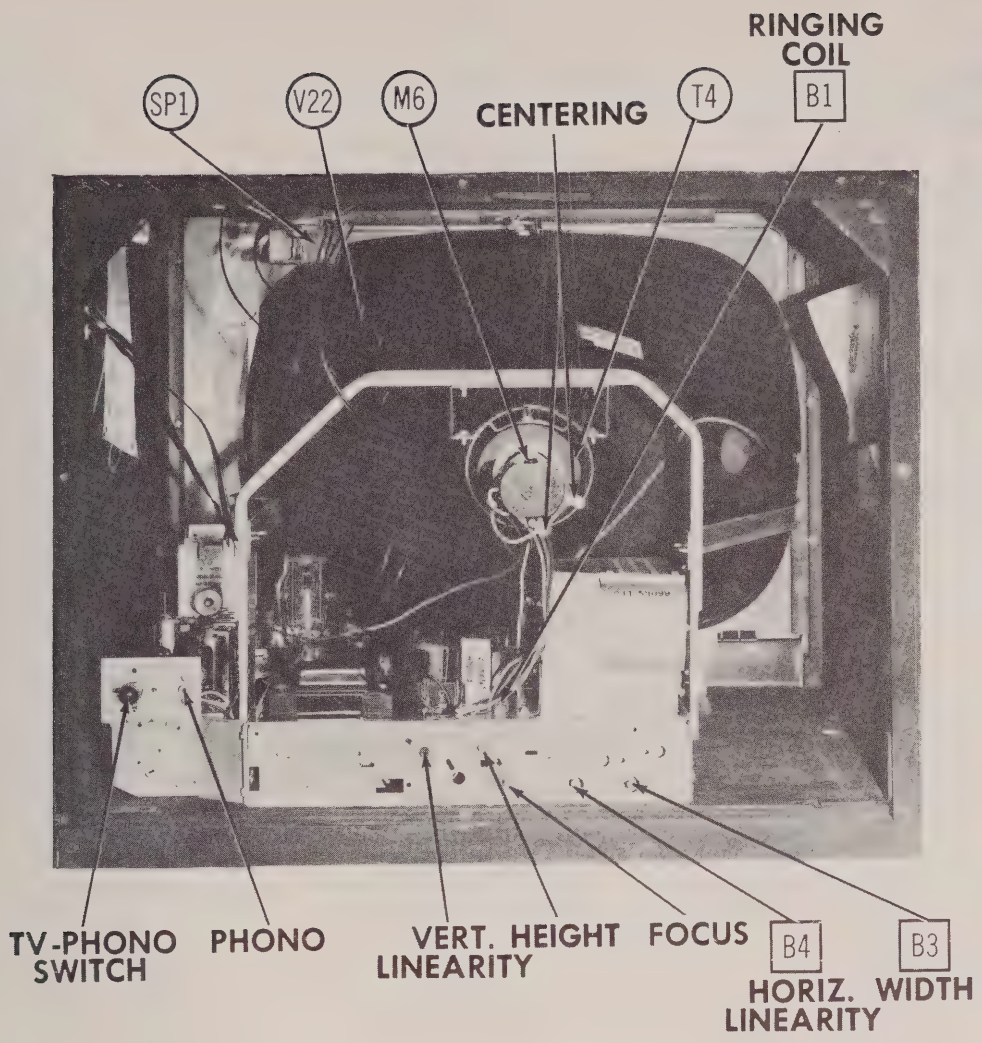
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

When necessary, the horizontal oscillator coil can be adjusted as follows:

1. Short out the horizontal oscillator coil L36 with a short jumper wire.
2. Set the horizontal hold control to the center of its mechanical range.
3. Connect the DC probe of a VTVM to the junction of R106 and C98. Connect the common lead to chassis.
4. Adjust the horizontal multivibrator trimmer (B2) for zero reading on VTVM. If zero can be approached but not quite reached it may be necessary to reset the horizontal hold control slightly to one side of mid range so that zero reading can be obtained on VTVM.
5. Remove the jumper from across the horizontal oscillator coil.
6. Adjust the horizontal oscillator slug (B1) for zero reading on VTVM.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the horizontal linearity slug (B4) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Check horizontal output transformer and yoke for loose connections, cold solder joint, or open winding.

INSUFFICIENT SWEEP

Check by substitution V16, V17, V18, V20 and V21.
Check waveform W14:

If Unsatisfactory	If Satisfactory
Check components of horizontal multivibrator. Check coupling network between V16 and V17.	Check components of horizontal output tube, particularly C107 and C108.

DRIVE LINES

Substitute V17 and V18. Check associated components.

COMPRESSED AT LEFT SIDE

Substitute V17 and V18.
Check wavelform W14:

If Unsatisfactory	If Satisfactory
Check coupling and shaping network between V16 and V17.	Check T2, T4 and T5.

FOLDS

Substitute V18. Check T4, T5 and ofther components of horizontal output and damper circuits.

VERTICAL

LOSS OF SWEEP

Check by substitution V14 and V11.
Check waveform at W9:

If Unsatisfactory	If Satisfactory
Check components of vertical multivibrator and coupling network between V14 and V11B.	Check components of vertical output tube, particularly T3 and T4B.

INSUFFICIENT SWEEP

Substitute V14 and V11. Check components of V11B.

COMPRESSED AT TOP

Substitute V11. Check coupling network between V14 and V11B.

COMPRESSED AT BOTTOM

Substitute V11. Check C2B and C2C.
Check T3 and T4B.

FOLDS

Substitute V14 and V11. Check components, especially T3 and T4.

FOLD AT TOP, STRETCHED AT BOTTOM

Check C88 for open.

SYNC

HORIZONTAL

LOSS OS SYNC

Check by stustitution, V7, V12, V13, V15 and V16. Check associated components.

CRITICAL HOLD

Check by substitution V7, V12, V13, V15 and V16. Check coupling and waveshaping components.

PULLING

Substitute V15 and V16. Check coupling network between V15 and V16.

VERTICAL

LOSS OF SYNC

Substitute V11, V12, V13 and V14. Check output from sync separator for vertical sync pulses.

If Unsatisfactory	If Satisfactory
Trace signal back, stage by stage. Check components of faulty stage.	Check vertical integrating network and vertical oscillator circuit.

CRITICAL HOLD

Substitute V11, V12, V13 and V14.
Follow procedure outlined under LOSS OF SYNC.

TRIGGERING

Substitute V14 and check associated circuit components.

VIDEO

SOUND BARS

Check adjustment of A11 (4.5MC trap) in video amplifier circuit. Check local oscillator adjustment and video IF alignment.

POOR RESOLUTION

Substitute video IF tubes.
Check video IF alignment.
Check associated components.

SMEAR

Substitute V6. Check associated components, expecially the peaking coils.

ONE WIDE BLACK BAR

Check tuner, video IF and video output tubes for filament to cathode leakage.

POOR CONTRAST

Substitute V6. Check waveform W2.

If Unsatisfactory	If Satisfactory
Check tuner and video IF tubes and components.	Check picture tube. Check V22 grid circuit components.

AUDIO

WEAK, OR NO SOUND

Substitute V8, V9 and V10. Check T7 and speaker. Check adjustment of gated beam detector following instructions outlined in alignment data.

DISTORTED

Check audio amplifier using audio signal generator and scope.

If Undistorted	If Distorted
Check detector adjustment. Check video IF alignment.	Check components of audio amplifier.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		Westinghouse PART No.	STANDARD REPLACEMENT		
V1A	RF Amplifier	6BZ7	6BZ7	9AJ	
B	RF Amplifier	6BQ7A	6BQ7A	9AJ	
V2	Converter	6X8	6X8	9AK	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	12BY7	12BY7	9BF	
V7	AGC Keying	6AU6	6AU6	7BK	
V8	Sound IF Amp.- AF Amplifier	6AU6	6AU6	7BK	
V9	Audio Detector	6BN6	6BN6	7DK	
V10	Audio Output	6BK5	6BK5	9BQ	
V11	Noise Clipper- Vert. Output	12BH7	12BH7	9A	
V12	Sync Amplifier-	12AT7	12AT7	9A	
V13	Sync Separator	6AU6	6AU6	7BK	
V14	Vert. Mult.	6SN7GT	6SN7GT	8BD	
V15	Horiz. AFC	6AL5	6AL5	6BT	
V16	Horiz. Mult.	12AU7	12AU7	9A	
V17	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V18	Damper	6AX4GT	6AX4GT	4CG	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5U4G	5U4G	5T	
V21	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA			RTMA BASE TYPE	NOTES
	Westinghouse PART No.	SYLVANIA PART No.			
V22A	21FP4A	21FP4A		12C	① Circuit changes necessary
		21FP4 ①		12C	
B	17LP4 or 17VP4	17LP4		12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	450	V-9891	AFH4-93		DO92		FP428.4	TVL-4720	
B	■40	450								
C	▲30	350								
D	30	350								
C2A	■10	450	V-11535-1	E4D584		C104			TVL-3753	
B	▲30	450				BR205A			TVA-1306	
C	▲150	50								
D	20	50								
C3	10	450	V-10293-1	PRS500/10		BR1045A		TC72	TVA-1705	
C4	10	350		PRS350/10		BR1045A		TC62	TVA-1604	Note 1
C5	22			SI22NP0	TCZ-22		NP0K-220		5TCC-Q22	
C6	22			SI22NP0	TCZ-22		NP0K-220		5TCC-Q22	
C7	15									
C8	3			SI3NP0			NP0K-030	ZT-553		
C9	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C10	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C11	470			SI470	D6-471	TM5T5	GP2K-471	UC-5347	5GA-T47	
C12	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C13	.33						NP0K-R33			
C14	.36						NP0K-R36			
C15	1.6						NP0K-1R6			
C16	15						N330K-150			
C17	.75						NP0K-R75	ZT-5675		
C18	15						N330K-150			
C19	10						N470K-100			
C20	1.6						NP0K-1R6			
C21	1.5			SI1.5NP0	TCZ-1.5		NP0K-1R5	ZT-5515	5TCCB-V15	
C22	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C23	10			SI10NP0	TCZ-10		NP0K-100	ZT-541	5TCC-Q1	
C24	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C25	150									
C26	7.5									
C27	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C28	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C29	800			BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C30	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C31	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C32	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C33	1000			BPD-001	DD-102	TM5D1	801-001	DC-521	5HK-D1	
C34	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C35	3.3		V-9926-2	SI3.3NP0	TCZ-3.3		NP0K-3R3	ZT-5533	5TCCB-V33	
C36	.5		V-5658-11				NP0K-R5			
C37	12		R3CC20SL120K				N330K-120			
C38	.02	400	RCP10W4203M	P488-02	DD-203	PTE4S2		PT412	4TM-S2	
C39	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C40	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C41	800		V-9863-1	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C42	800		V-9863-1	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C43	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	
C44	800		V-9863-1	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C45	1.0		V-5658-1	SI1NP0	TCZ-1		NP0K-010		5TCCB-V1	
C46	12		R3CC20SL120K				N330K-120			
C47	800		V-9863-1	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C48	800		V-9863-1	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C49	800		V-9863-1	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C50	800		V-9863-1	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C51	800		V-9863-1	BPD-0008	DD-801	TM5T8	801-001	DC-521	5GA-T8	
C52	5000		V-5596	BPD-005	MD-502	TM5D5	811-005	DC-525	5HK-D5	Note 2

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C53	3.3		V-9926-2	813-3NP0	TCZ-3.3		NP0K-3R3	2T-5533	5TCCB-V33	
C54	12		R3CC208L120K				N330K-120			
C55	5		V-9926-3	615NP0	TCZ-4.7		NP0K-050	2T-555	5TCCB-V47	
C56	7		V-5658-12	816.5NP0	TCZ-6.8		NP0K-070	2T-5568	5TCCB-V68	
C57	56	500	RCM20B560K							
C58	5000		V-5596	BPD-005	MD-502	TM5D5	8L-005	DC-525	5HK-D5	
C59	470	500	RCM20B471K	1468-00005	D6-471	5W5T5	GP2K-471	MC245	1FM-35	
C60	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C61	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C62	5000		V-5596	BPD-005	MD-502	TM5D5	8L-005	DC-525	5HK-D5	
C63	.25	400	RCP10W4254M	P488-25		PTE4P25		PT4025	4TM-P25	
C64	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C65	5		V-9926-3	615NP0	TCZ-4.7		NP0K-050	2T-555	5TCCB-V47	
C66	150	500	RCM20B151K	1469-00015		5R5T15		MCB236		
C67	.001	400	RCP10W4102M	P688-001	D6-102	PTE5D2	GP2L-102	PT621	6TM-D1	Note 2
C68	.002	600	RCP10W6202M	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C69	5000		V-5596	BPD-005	MD-502	TM5D5	8L-005	DC-525	5HK-D5	
C70	5000		V-5596	BPD-005	MD-502	TM5D5	8L-005	DC-525	5HK-D5	
C71	47	500	RCM20B470K	1469-00005		5R5Q5		MCB225	MS-45	
C72	47	500	RCM20B470K	1469-00005		5R5Q5		MCB225	MS-45	
C73	5000		V-5596	BPD-005	MD-502	TM5D5	8L-005	DC-525	5HK-D5	
C74	5000		V-5596	BPD-005	MD-502	TM5D5	8L-005	DC-525	5HK-D5	
C75	470	500	RCM20B471K	1469-00005		5R5T5		MCB236	MS-35	
C76	.02	400	RCP10W4203M	P488-02		PTE4S2		PT423	4TM-S2	
C77	.005	400	RCP10W4502M	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	Note 2
C78	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT401	4TM-S1	Note 3
C79	.005	400	RCP10W6502M	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C80	270	500	RCM20B271K	56-9-0003		5R5T3		MCB241	MS-33	
C81	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT401	4TM-S1	
C82	47	500	RCM20B470K	1469-00005		5R5Q5		MCB225	MS-45	
C83	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C84	270	500	RCM20B271K	1469-0003		5R5T3		MCB241	MS-33	
C85A	.01			P688-01		PTE6S1	GP2-333-103	PT611	6TM-S1	
B	.002			P688-002	+PC-101	PTE6D2	GP2-333-202	PT622	6TM-D2	
C	.005		+V-1192-1	P688-005		PTE6D5	GP2-333-502	PT625	6TM-D5	
D	.005			P688-005		PTE6D5	GP2-333-502	PT625	6TM-D5	
C86	.01	400	RCP10W4103K	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C87	.05	400	RCP10W4503M	P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C88	.05	400	RCP10W4503K							
C89	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C90	.1	400	RCP10M6104M	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C91	150	500	RCM20B151K	1469-00015		5R5T15		MCB236		
C92	100	500	RCM20B101K	1469-0001		5R5T1		MCB235	MS-31	
C93	680	500	RCM20B681K	1479-0007		5R5T7			MS-37	
C94	390	500	RCM20B391K	1469-0004		5R5T4		MCB243	MS-34	
C95	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C96	.005	400	RCP10W4502M	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C97	.01	400	RCP10W4103M	P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C98	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C99	100	500	RCM20B101K	1469-0001		5R5T1		MCB235	MS-31	
C100	3900	500	RCM30C392K	1464-004		5R5T392		MB463	MS-24	
C101	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C102	100	500	RCM20B101K	1469-0001		5R5T1		MCB236	MS-31	
C103	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C104	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C105	390	500	RCM20D391K	1469-0004		5R5T4		MCB243	MS-34	
C106	.01	600	RCP10M6103M	P688-01	D6-103	PTE6S1	GP2-333-103	PT601	6TM-S1	
C107	.1	600	RCP10M6104M	P688-1	DF-104	PTE6P1		PT601	6TM-P1	
C108	.1	400	RCP10W4104M	P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C109	.04	400	RCP10W4403M	P688-04		PTE6S4		PT614	6TM-S4	
C110	.06	400	RCP10W4603M	P688-06		PTE6S6		PT616	6TM-S6	
C111	500	20000	V-9901-3	HV2GC	TV3-502	MMC-20T3	413-501		20DK-T5	
C112	.25	400	RCP10W4254M	P488-25		PTE4P25		PT4025	4TM-P25	
C113	51		V-9792-10510F							Note 4
C114	.01	600	V-5040-15	689ZX-01		PJ6S1		PT611	6TM-S1	
C115	.01	600	V-5040-15	689ZX-01		PJ6S1		PT611	6TM-S1	
C116	5000		V-5596	BPD-005	MD-502	TM5D5	8L-005	DC-525	5HK-D5	
C117	5000		V-5596	BPD-005	MD-502	TM5D5	8L-005	DC-525	5HK-D5	
C118	1000			BPD-001	MD-501	TM1D1	801-001	DC-521	5GA-T1	Note 5
C119	800			BPD-0008	D8-801	TM5T8	801-001	DC-521	5GA-T8	Note 1

Note 1. Not used in all Models.
Note 2. Used in Ch. V-2233-1 only.
Note 3. Chassis V-2232-2, V-2233-3 use .02MFD in this application. (Part #RCP10W4203M)
Note 4. Used only with the V-1571-1 deflection yoke.
Note 5. Not used with Ch. V-2232-1.
* Items C85A, C85B, C85C, C85D, R63A, R63B, R63C, R63D are combined in one unit.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	V-1540-1	Q18-133X	AT-88	BT-66-S	UT-429	Volume Tap② 50KΩ
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SW-A	Not Req.	US-36	Attach to R1A
R2A	1500Ω	½	V-1537-1	Q17-109	AG-41-S	U-8	Picture	
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
AA	1500Ω		V9877-4	QJ-382*	RTV-288	SBBT-704-S	UF152L	Picture-Panel-Note 1
R1AB	500KΩ						UR55734	Volume Tap② 50KΩ-Rear
C	Switch						US-36	Attach to R1AB
R3A	1 Meg	½	V-11536-1	Q13-137	AG-63-Z	AB-70	U-53	Tone-Note 2
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A
R4A	125KΩ	½	V-11538-1	Q11-218	AG-52-S	AB-60	U-415	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4 •	Not Req.	Attach to R4A
R4AA	125KΩ	½	V-10215-1	Q11-218	AG-52-S	AB-60	U-415	Horiz. Hold-Note 3
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R4AA.
R5A	50KΩ	½	V-11536-1	Q11-123	AG-44-S	AB-31	U-35	Brightness
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R5A
R5AA	50KΩ	½	V-10914-1	Q11-123	AG-44-S	AB-31	U-35	Brightness-Note 3
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R5AA.
R6A	750KΩ	½	V-11539-1	Q11-136	AG-61-S	AB-69	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R6A
R6AA	750KΩ	½	V-9894-3	Q11-136	AG-61-S	AB-69	U-54	Vert. Hold-Note 3
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R6AA.
R7A	2 Meg	½	V9894-2	Q11-139	AG-83-S	AB-75	SU-56	Focus
B	Shaft		Not Req.	Not Req.	KSS-3	AK-1	Not Req.	Attach to R7A

CONTROLS (CONT.)

ITEM No	RATING RESIST-ANCE	RATING WATTS	REPLACEMENT DATA Westinghouse PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R8A	250KΩ	½	V-9813-4	Q11-130	AG-55-S	AB-50	SU-46	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R8A
R9A	5000Ω	½	V-6612	Q11-114	AG-19-S	AB-10	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R9A.
R10	500Ω	1	V-11345-2					Quieting-Wire Wound

Note 1. Dual concentric control used in chassis No. V-2232-2, V-2233-2, & V-2233-3.
Note 2. Used only in chassis No. V-2233-1.
Note 3. Used in chassis No. V-2232-2, V-2233-2, & V-2233-3.
† UNIVERSAL REPLACEMENT (MALLORY EXACT DUPLICATE PART NO. UE181S).
* CONCENTRIKIT EQUIVALENT-KIT K-2, BASE ELEMENTS & SHAFTS B17-109 & P1-212 (Panel)
B18-132X & R2-226 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Westinghouse PART No.	IRC PART No.	NOTES
R11	4700Ω	½		BTS-4700	
R12	1Meg-5%	½		BTS-1Meg-5%	
R13	750KΩ-5%	½			
R14	220KΩ	½			
R15	2200Ω	½		BTS-2200	
R16	2200Ω	½		BTS-2200	
R17	15KΩ	½		BTS-15K	
R18	220Ω	½		BTS-220	
R19	470Ω	½		BTS-470	
R20	3900Ω	½		BTS-3900	
R21	4700Ω	½		BTS-4700	
R22	1000Ω	½		BTS-1000	
R23	1000Ω	½		BTS-4000	
R24	150Ω	½	RC20AE151K	BTS-150	
R25	1.5Meg-5%	½	RC20AE155J	BTS-1.5Meg-5%	
R26	18Meg-5%	1	RC20AE186J	BTS-18Meg-5%	
R27	2200Ω	2	RC40AE222K	BTB-2200	
R28	560KΩ-5%	½	RC20AE564J	BTS-560K-5%	Note 1
R29	100Ω	½	V-9927-10	BTS-100	
R30	10Ω	½	RC20AE100K		
R31	68Ω	½	RC20AE680K	BTS-68	
R32	470Ω	½	RC20AE471M	BTS-470	
R33	100KΩ-5%	½	RC20AE104J	BTS-100K-5%	
R34	10KΩ	½	RC20AE103M	BTS-10K	
R35	470Ω-5%	½	V-9927-3	BTS-470-5%	
R36	68Ω	½	RC20AE680K	BTS-68	
R37	470Ω	½	RC20AE471M	BTS-470	
R38	470Ω-5%	½	V-9927-3	BTS-470-5%	
R39	150Ω	½	RC20AE151K	BTS-150	
R40	470Ω	½	RC20AE471M	BTS-470	
R41	220Ω	½	RC20AE221K		Note 3
R42	12KΩ	½	RC20AE123K	BTS-12K	
R43	3300Ω	½	RC20AE332K	BTS-3300	
R44	10Ω	½	RC20AE100K		Note 3
R45	22KΩ	½	RC20AE223K	BTS-22K	
R46	8200Ω	2	RC40AE822K	BTB-8200	Note 2
R47	8200Ω	2	RC40AE822K	BTB-8200	Note 3
R48	330KΩ	½	RC20AE334K	BTS-330K	
R49	330KΩ	½	RC20AE334K	BTS-330K	
R50	1.5Meg	½	RC20AE155K	BTS-1.5Meg	
R51	10KΩ	½	RC20AE103K	BTS-10K	Note 3
R52	68KΩ	1	RC30AE683K	BTA-68K	
R53	470KΩ	½	RC20AE474K		
R54	120Ω	½	RC20AE121K	BTS-120	
R55	1200Ω	2	RC40AE122K	BTB-1200	
R56	18KΩ	2	RC40AE183K	BTB-18K	
R57	27KΩ	2	RC40AE273K	BTB-27K	
R58	470Ω	½	RC20AE471M	BTS-470	
R59	220KΩ	½	RC20AE224K	BTS-220K	
R60	470KΩ	½	RC20AE474K	BTS-470K	Note 3
R61	10KΩ	½	RC20AE103M	BTS-10K	Note 3
R62	15Ω	3	RC20AE15UK	Note 3	
R63	180Ω	½	RC20AE181K	BTS-180	
R64	1000Ω	2	RC40AE102K	BTB-1000	Note 3
R65	680Ω	2	RC40AE681K	BTB-680	
R66	18KΩ	2	RC40AE183K	BTB-18K	
R67	470Ω	½	RC20AE471M	BTS-470	
R68	4700Ω	½	RC20AE472K	BTS-4700	
R69	1 Meg	½	RC20AE105K	BTS-1 Meg	
R70	2200Ω	½	RC20AE222K	BTS-2200	
R71	4700Ω	½	RC20AE472K	BTS-4700	
R72	270KΩ	½	RC20AE274K	BTS-270K	
R73	220KΩ	½	RC20AE224K	BTS-220K	
R74	330KΩ	½	RC20AE334K	BTS-330K	
R75	2200Ω	½	RC20AE222K	BTS-2200	
R76	470KΩ	½	RC20AE474K	BTS-470K	
R77	470KΩ	½	RC20AE474K	BTS-470K	
R78	390KΩ	½	RC20AE394K	BTS-390K	
R79	47KΩ	½	RC20AE473K	BTS-47K	
R80	220KΩ	½	RC20AE224K	BTS-220K	
R81	27KΩ	½	RC20AE273K	BTS-27K	
R82	6800Ω	½	RC20AE682K	BTS-6800	
R83A	22KΩ	½		BTS-22K	
B	220Ω	½	+V-11192-1	BTS-220	
C	8200Ω	½		BTS-8200	
D	8200Ω	½		BTS-8200	
R84	10KΩ	½	RC20AE103K	BTS-10K	
R85	47Ω	½	RC20AE470K	BTS-47	
R86	1200Ω	½	RC20AE122K	BTS-1200	
R87	100KΩ	½	RC20AE104K	BTA-100K	
R88	560KΩ	½	RC20AE564K	BTS-560K	
R89	100KΩ	½	RC20AE104K	BTS-100K	
R90	39KΩ	½	RC20AE393K	BTS-39K	
R91	47KΩ	½	RC20AE743K	BTS-47K	
R92	6800Ω	½	RC20AE682K	BTS-6800	
R93	33000Ω	½	RC20AE332K	BTS-33000	
R94	2.2Meg	½	RC20AE225K	BTS-2.2Meg	
R95	1000Ω	2	RC40AE102K	BTS-1000	
R96	15KΩ	2	RC40AE153K	BTS-15K	
R97	15KΩ	2	RC40AE153K	BTS-15K	
R98	560Ω	½	RC20AE561K	BTS-560	
R99	560Ω	½	RC20AE561K	BTS-560	
R100	390Ω	½	RC20AE391K	BTS-390	Note 7
R101	1 Meg	½	RC20AE105K	BTS-1 Meg	
R102	1 Meg	½	RC20AE105K	BTS-1 Meg	
R103	220KΩ	½	RC20AE224K	BTS-220K	
R104	470KΩ	½	RC20AE474K	BTS-470K	
R105	18KΩ	½	RC20AE183K	BTS-18K	
R106	47KΩ	½	RC20AE473K	BTS-47K	
R107	82Ω	½	RC20AE820K	BTS-820	
R108	27KΩ	½	RC20AE273K	BTS-27K	
R109	270KΩ-5%	½	RC20AE274J	BTS-270K-5%	
R110	56KΩ	½	RC20AE563K	BTS-56K	
R111	22KΩ	½	RC20AE223K	BTS-22K	
R112	27KΩ	½	RC20AE273K	BTS-27K	
R113	6800Ω	½	RC20AE682K	BTS-6800	
R114	27KΩ	½	RC20AE103K	BTS-27K	Note 4
R115	470KΩ	½	RC20AE474K	BTS-150K	
R116	150Ω	½	RC20AE151M		
R117	33Ω	1	RC30AE330K	BW-1-33	
R118	8200Ω	5	V-11338-5	1 3/4A-8500	
R119	3900Ω	2	RC40AE392K	BTB-3900	Note 5
R120	68KΩ	1	RC30AE683K	BTA-68K	Note 6
R121	1000Ω	½	RC20AE102K	BTS-1000	
R122	330KΩ	1	V-9927-7		
R123	33KΩ	½	RC20AE333K	BTS-33K	
R124	39KΩ	2	RC40AE393K	BTB-39K	Note 3
R125	3000Ω	30	V-9375-4	2D-3000	
R126	50Ω	10	V-11338-8		
R127	220KΩ	½	RC30AE224M	BTA-220K	

Note 1. Chassis No. V-2232-2 used a 470KΩ resistor in this application.
Note 2. Chassis No. V-2232-2 uses a single 3900Ω resistor in this application.
Note 3. Not used in all models.
Note 4. Some models may use a 10KΩ resistor in this application.
Note 5. Chassis No. V-2232-2 uses a 2200Ω resistor in this application.
Note 6. Not used in chassis No. V-2232-2.
Note 7. Used only with deflection yoke No. V-1571-1.
* Items R63A, R63B, R63C, R63D, C85A, C85B, C85C, C85D are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No	RCA TYPE No.
T1	117VAC	595VCT	5VAC	12.6VCT	V-11544-1		P-3066 ①			
	1.92A	.24A	6A	6A	2.5A	V-11544-2 ②				

① Parallel the two 5V windings, and use as Sec. 2.
② Alternate power trans. Ch. V-2232-2.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	RCA TYPE No.	NOTES
T2	983Ω	3.5Ω	V-11548-2		HVO-9 ① ②		D-19 ③④	232T1 ⑭	Horiz. Output Trans.
	tap ⑤ 2.5Ω, 50Ω, 830Ω	SEC. 2 0Ω							
T3	1800Ω tap ⑥ 71Ω		V-10909-1	A-8141	A-3039	TSO-12	A-104X	226T1	Vert. Output Trans.
T4A	26Ω		V-11570-1 ⑮	DY-11A ⑯		TY-7 ⑰	Y-19 ⑰		Horiz. Deflection Coils
B	45Ω								Vert. Deflection Coils
T5	21Ω		V-11545-1	WC-5 ⑨⑩	MWC-1 ⑧ ⑨	TWL-1	WC-12 ⑩	212R1 ⑬	Horiz. Linearity Coil
T6	3Ω		V-11566-2	WC-2 ⑪	MWC-2 ⑧ TL-3 ⑪			209R1 ⑫	Width Coil

① Use with width coil MWC-1.
② Connect hotside of yoke and damper cathode to terminal #7. Connect yoke return to terminal #3. Connect secondary of MWC-1 to keyer & AGC network (Raster and no picture reverse secondary connections).
③ Use with width coil WC-11.
④ Jumper terminals 7 and 8. Connect damper cathode and hotside of yoke to terminal 7 or 8, yoke return to terminal #3. Connect width coil secondary to keyer and AGC network (raster and no picture, reverse secondary connections)
⑤ Yoke assembly contains yoke V-11571-1 and centering device.
⑥ Use original horiz. deflection coil network if necessary.
⑦ Use original deflection coil network.
⑧ Enlarge mounting hole.
⑨ Do not use secondary.
⑩ Connect to coded blue and red terminals.
⑪ Do not use center tap.
⑫ Width coil used as width coil (Do not use tap)
⑬ Width coil used as linearity coil.
⑭ Connect original terminal 3 to new terminal 10, original terminal 4 to new terminal 9, original #8 to new #4, original #7 to new #3, original #5 to new #1, original #6 to new #2.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA Westinghouse PART No.	STANCOR PART No	MERIT PART No	CHICAGO PART No	TRIAD PART No	NOTES
T7	4.7K	3.3	340Ω	.4	V-9238	A-3878	A-2930	RO-302	S-3X	

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA Westinghouse PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1A	5 1/4"	PM	3.2Ω	V-10030-1	525T4	52A1	‡ 10" PM speaker used in Models H-753K21, H-754K21, H-756K21, H-757K21, H-758K21, H-759K21, H-762K21, H-763K21.
B	10"	PM	3.3Ω	V-9770-1 ①	10J11	10A31	

COILS (RF-IF)

ITEM No.	USE	DC RES PRI.	DC RES SEC.	REPLACEMENT DATA Westinghouse PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Trans.	0Ω CT	0Ω					Low channel Sec. -0Ω
L2	Ant. Coils	0Ω						
L3	UHF 1 Ant. Coil	0Ω						
L4	UHF 2 Ant. Coil	0Ω						
L5	Ant. Coil	0Ω						Channel 13
L6	Fil. Choke	0Ω						
L7	Neutr. Coil	0Ω						
L8	RF Coil	0Ω						Channel 13
L9	RF Coils	0Ω						
L10	Mixer Grid Coil	0Ω						Channel 13
L11	Mixer Grid Coils	0Ω						Channel 13
L12	Osc. Plate Coil	0Ω CT						Channel 6
L13	Osc. Coil	0Ω						
L14	Osc. Coils	0Ω						
L15	Conv. Plate	.1Ω						
L16	1st. Video IF	.2Ω		V-9882-7				
L17	Sound Trap	0Ω		V-10771-1				
L18	Fil. Choke	0Ω		V-4886-2			4602	1.1 Microhenries
L19	2nd. Video IF	.8Ω	.4Ω	V-9879				
L20	Adj. Channel Sound Trap	0Ω		V-10771-1				
L21	Fil. Choke	0Ω		V-4886-2			4602	1.1 Microhenries
L22	3rd. Video IF	.8Ω	.4Ω	V-9879				
L23	4th. Video IF	.8Ω	.4Ω	V-9880				
L24	Series Peaking Coil	1Ω		V-4886-1		TV-180	4634	14 Microhenries
L25	Series Peaking Coil	4.6Ω		V-9915-1	19-3093	TV-181	6177	100 Microhenries
L26	Shunt Peaking Coil	1Ω		V-4886-1		TV-180	4634	14 Microhenries
L27	4.5MC Trap	1.2Ω		V-9883-3	20-1004	TV-151	1470	
L28	Series Peaking Coil	7.5Ω		V-5902-1	19-3125	TV-184	4644	140 Microhenries
L29	Shunt Peaking Coil	1Ω		V-5902-5	19-3250	TV-185	6181	250 Microhenries
L30	Series Peaking Coil	1Ω		V-4886-1		TV-180	4624	14 Microhenries
L31	1st. Sound IF	.7Ω		V-9882-5	17-3400	TV-151	1470	
L32	Fil. Choke	0Ω		V-4886-2			4602	1.1 Microhenries
L33	2nd. Sound IF	1.2Ω		V-9882-3	17-3400	TV-151	1470	
L34	RF Choke	9.5Ω		V-9915-2			4648	350 Microhenries
L35	Quadrature Coil	5.5Ω		V-11396-1	17-1031 *			
L36	3 Horiz. Osc.	105Ω		V-6764	19-1576	TV-183	6210	

* Drill mounting hole.

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	Westinghouse PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.
L37	.230ADC	44Ω	1.24 Hy.	V-6471-2	C-2326 ①	C-2991 ①	TR-1733 ①	C-23X

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Westinghouse PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1/4A @ 250V	V-6171-3		312.250 (3AG 1/4)	357001	AGC 1/4	4405

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M2A	RF Tuner	V-11333-1	Models H-737T17, H-740T21, H-740TK21, H-743K21, H-751T21, H-752T21, H-754K21, H-755K21, H-756K21, H-757K21 H-758K21, H-579K21, H-760T21 and H-761T21
B	RF Tuner	V-11485-1	Models H-750T21 and H-753K21
M3	UHF Tuner	Model 803	Models H-760TU21 and H-761TU21
M4	Crystal Diode	V-10916-1	Video Detector (CK706, 1N64, or 1N60)
M5	Switch	V-11656-1	TV-Phono for H-740T21, H-742K21, H-743K21
M6A	Ion Trap Magnet	V-9784-5	All Models except H-737T17
B	Ion Trap Magnet	V-9784-4	Model H-737T17
B2	Trimmer Cap.	V-11228-1	Horiz. Multivibrator, 5-40MMF
	Cabinet	V-1273-2	Models H-737T17
	Cabinet	V-1292-1	Model H-740T21
	Cabinet	V-1293-1	Model H-742K21
	Cabinet	V-1293-2	Model H-743K21
	Cabinet	V-1282-6	Models H-750T21, H-751T21, H-761T21, H-761TU21
	Cabinet	V-1274-6	Model H-753K21
	Cabinet	V-1275-2	Model H-752T21
	Cabinet	V-1274-1	Model H-754K21
	Cabinet	V-1274-2	Model H-755K21
	Cabinet	V-1294-1	Model H-756K21
	Cabinet	V-1294-2	Model H-757K21
	Cabinet	V-1272-1	Model H-758K21
	Cabinet	V-1272-2	Model H-759K21
	Cabinet	V-1282-33	Model H-760T21, H760TU21
	Back Cover Assy.	V-10928-6	Model H-737T17
	Back Cover Assy.	V-10962-13	Models H-740T21, H-742K21, H-743K21
	Back Cover Assy.	V-10962-14	Models H-750T21, H-753K21
	Back Cover Assy.	V-10962-15	Models H-751T21, H-752T21, H-754K21, H-755K21, H-756K21, H-757T21, H-758K21, H-759K21, H-760T21, H-761T21, H-761TU21,
	Safety Glass	V-11306-2	Model H-737T17
	Safety Glass	V-11505-2	Models H-740T21, H-742K21, H-743K21
	Safe ty Glass	V-11625-1	Models H-750T21, H-753K21, H-751T21, H-754K21, H-756K21, H-758K21
	Safety Glass	V-11690-1	Models H-752T21, H-755K21, H-757K21, H-759K21
	Safety Glass	V-11888-2	Models H-760T21, H-760TU21
	Safety Glass	V-11888-1	Models H-761T21, H-761TU21
	Mask Plate	V-11672-1	Model H-737T17
	Mask Plate	V-10932-1	Models H-740T21, H-742K21, H-750T21, H-753K21, H-751T21, H-754K21, H-756K21, H-758K21, H-760T21, H-760TU21, H-761T21, H-761TU21
	Mask Plate	V-10932-2	Model H-743K21, H-752T21, H-755K21, H-757H21, H-759K21
	Mask	V-11584-1	Models H-740T21, H-742K21
	Mask	V-11584-2	Model H-743K21
	Mask	V-10929-1	Model H-750T21, H-753K21, H-751T21, H-754K21, H-756K21, H-758K21, H-760T21, H-760TU21
	Mask	V-10929-2	Models H-752T21, H-755K21, H-757K21, H-759K21
	Panel, Control	V-11503-1	Model H-740T21, H-742K21
	Panel, Control	V-11503-2	Model H-743K21
	Escutcheon	V-11195-1	Model H-758K21
	Knob	V-9938-4	Off/On Volume, Models H-737T17, H-751T21, H-754K21, H-756K21, H-758K21, H-760T21, H-760TU21, H-761T21, H-761TU21
	Knob	V-111577-1	Off/On Volume, Models H-740T21, H-742K21
	Knob	V-111577-2	Off/On Volume, Model H-743K21
	Knob	V-9938-1	Off/On Volume, Models H-750T21, H-753K21
	Knob	V-9938-5	Off/On Volume, Models H-752T21, H-755K21, H-757K21, H-759K21
	Knob	V-9939-5	Contrast Models H-737T17, H-751T21, H-754K21, H-756K21, H-758K21, H-760T21, H-760TU21, H-761T21, H-761TU21
	Knob	V-9939-1	Contrast Models H-750T21, H-753K21
	Knob	V-9939-6	Contrast Models H-752T21, H-755K21, H-757K21, H-759K21
	Knob	V-10926-1	Horiz. Hold & Brightness Model H-737T17, H-750T21, H-753K21, H-751T21, H-752T21, H-754K21, H-755K21, H-756K21, H-757K21, H-758K21, H-759K21, H-760T21, H-761T21, H-760TU21, H-761TU21
	Knob	V-9940-3	Fine Tuning Models H-737T17, H-751T21, H-754K21, H-756K21, H-758K21, H-760T21, H-760TU21, H-761T21, H-761TU21
	Knob	V-11513-1	Fine Tuning Models H-740T21, H-742K21
	Knob	V-11513-2	Fine Tuning Model H-743K21
	Knob	V-9940-1	Fine Tuning Models H-750T21, H-753K21
	Knob	V-9940-4	Fine Tuning Models H-752T21, H-755K21, H-757K21, H-759K21
	Knob	V-11146-1	Channel Selector, Models H-737T17, H-751T21, H-754K21, H-756K21, H-758K21, H-760T21, H-760TU21, H-761T21, H-761TU21
	Knob	V-11512-2	Channel Selector, Models H-740T21, H-742K21, H-743K21
	Knob	V-10676-1	Channel Selector, Models H-750T21, H-755K21, H-756K21,
	Knob	V-11146-2	Channel Selector, Models H-752T21, H-755K21, H-756K21, H-757K21, H-758K21, H-759K21
	Knob	V-9547-1	TV-Phono Selector, Models H-740T21, H-742K21, H-743K21

TROUBLE SHOOTING AIDS (CONT.)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V16, V17, V18 and V19. Check waveform at W14:

If Unsatisfactory	If Satisfactory
Check components of horizontal oscillator and coupling network between V16 and V17.	Check T2 and T4. Check high voltage filter components. Check damper circuit.

WEAK HIGH VOLTAGE

Substitute V16, V17, V18, V19, V20 and V21.
Follow procedure outlined under LOSS OF HIGH VOLTAGE.

BLOOMING

Substitute V16, V17, V18, V19, V20 and V21. Check associated components, particularly R122 for increase resistance.

POWER

SMALL RASTER, WEAK SOUND

Substitute V20 and V21. Check B+ circuit for shorts.

DIM PICTURE

Measure B+

If Low	If Normal
Check for shorts	Check V18 and other components of boost B+.

GENERAL

RASTER, BUT NO PICTURE, SOUND OR SNOW

Check by substitution V1, V2, V3, V4 and V5. Check associated components.

WEAK PICTURE AND WEAK SOUND

Check video IF tubes and components.

SNOW, BUT NO PICTURE OR SOUND

Check tuner tubes and components.
Check local oscillator setting.

SOUND, BUT NO PICTURE

Substitute V6 and check components.

INTERMITTANT STREAKS

Chech high voltage circuit for corona discharge and arcing.

TOTAL LOSS OF SYNC

Substitute V7 and check components.

Symptoms shown above are assumed and are not indicative of the quality and workmanship of this receiveing equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removing the channel selector and fine tuning knobs.

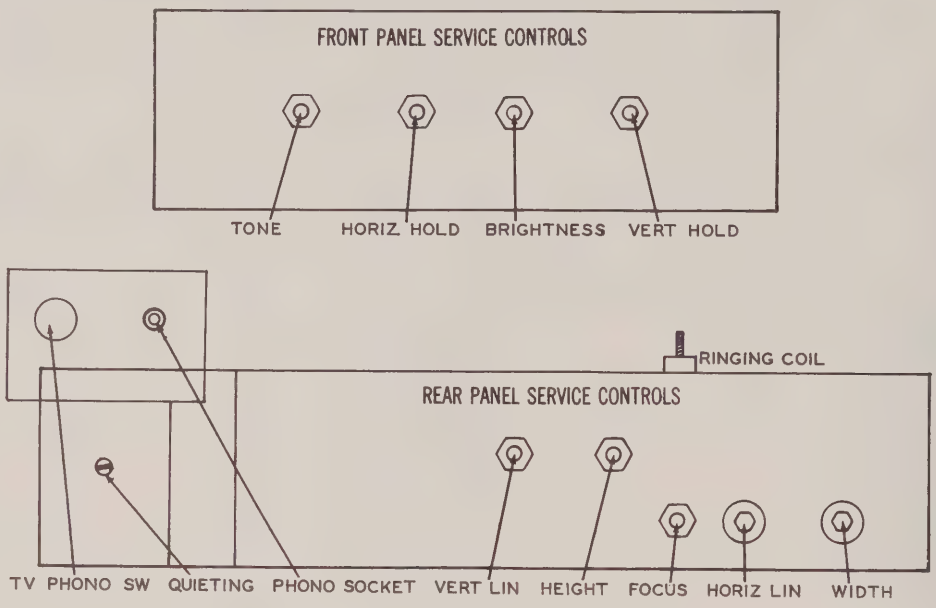
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



QUIETING CONTROL

Screwdriver adjustment through hole on rear apron of IF chassis. Adjust on weak signal for minimum noise.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horizontal hold control at the center of its range and adjust the horizontal osc. slug until picture synchronizes horizontally. (For location see tube placement chart).

FUSES

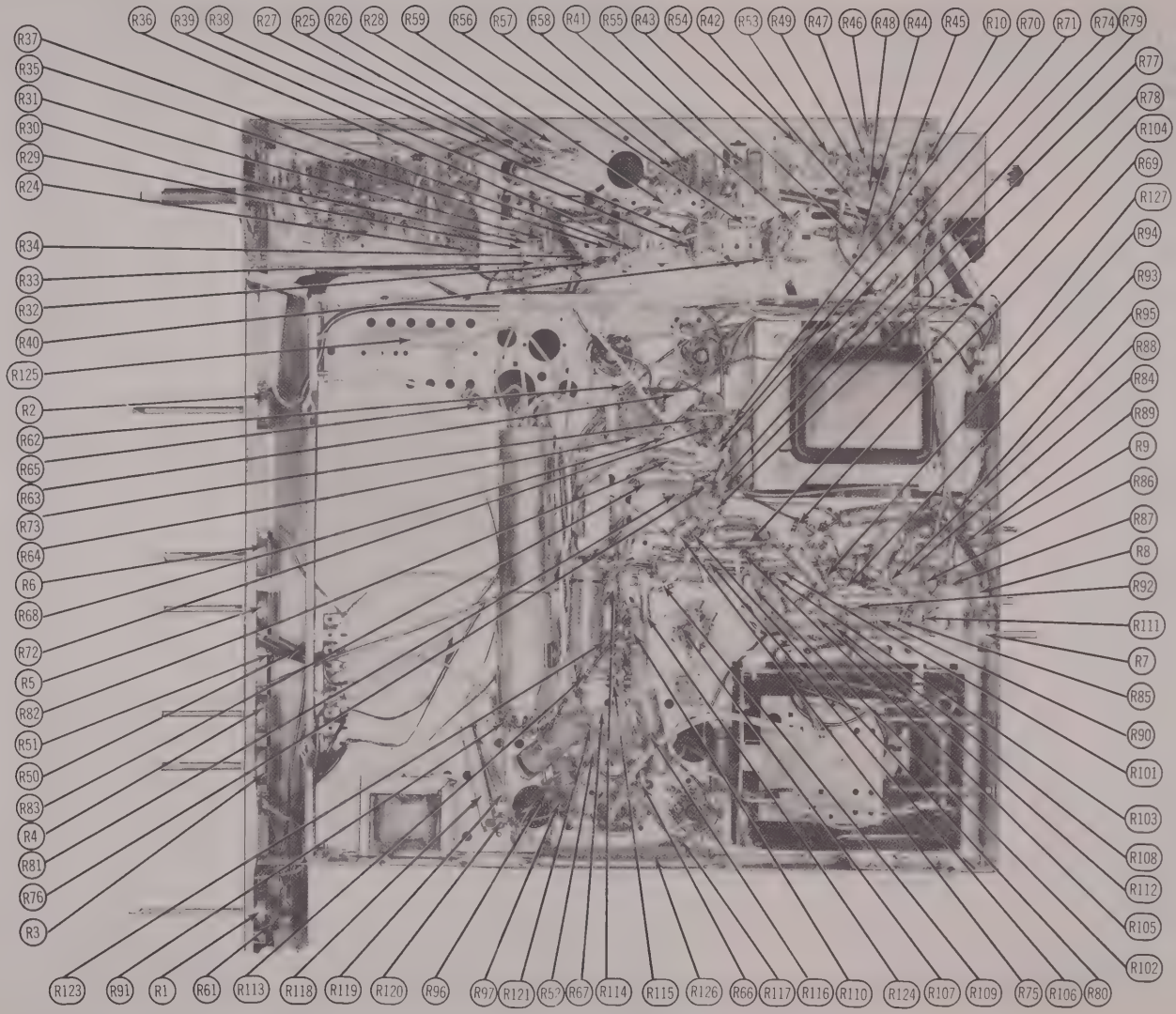
One fuse is used for horizontal sweep protection. (For location see tube placement chart).

CENTERING

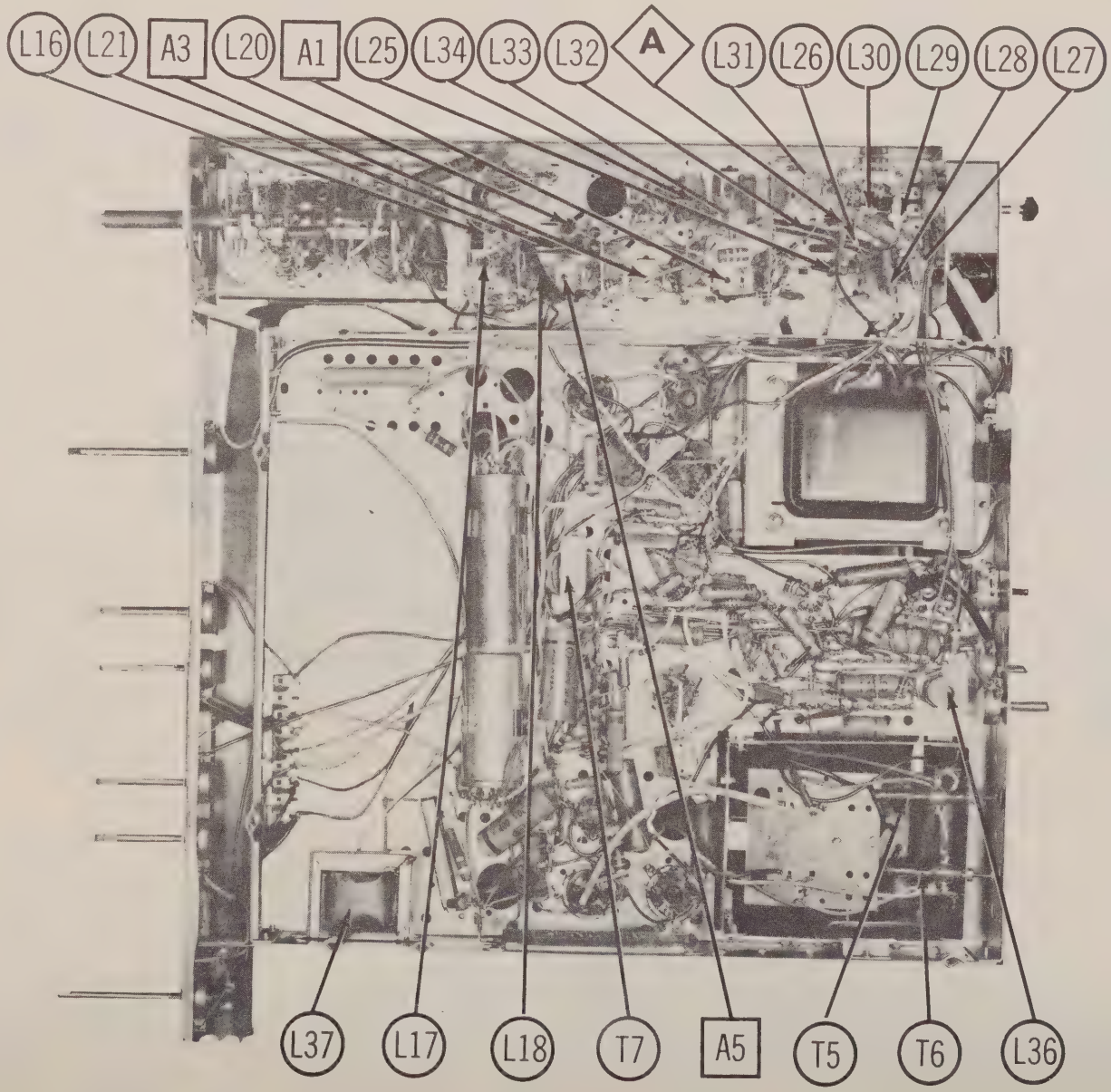
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Disconnect built-in antenna.
3. Remove 8 wood screws, disconnect transmission line. Remove rear cover.
4. Disconnect speaker. Remove 2 speaker nuts. Remove speaker. (Not necessary for removal of chassis).
5. Remove 6 chassis bolts. Remove chassis.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

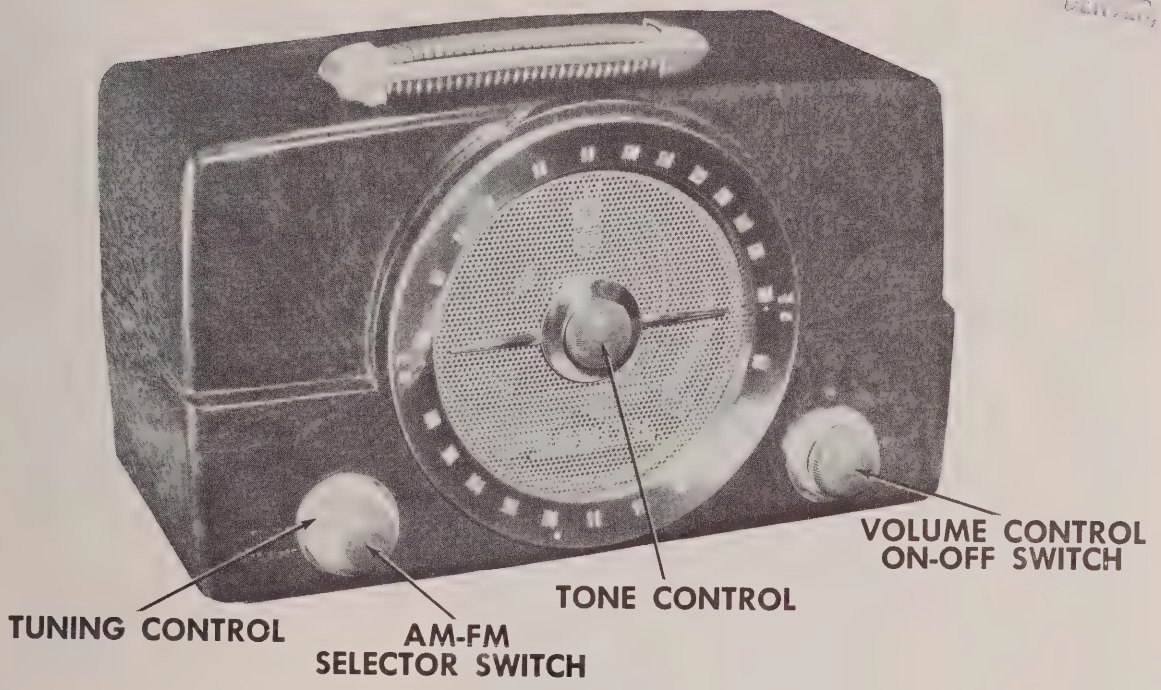


CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

ZENITH MODELS
K725, F, G (Ch. 7K01)

L. E. CHAMPIONSHIP
DENVER, COLORADO

ZENITH MODELS
K725, F, G (Ch. 7K01)



ZENITH MODELS
K725, F, G (Ch. 7K01)

TRADE NAME	Zenith Models K725, K725F, K725G (Ch. 7K01)		
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Illinois.		
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver		
TUBES (Seven)	Types 6BJ6 FM AM RF Amp., 12AT7 FM AM Conv., 12BA6 1st. AM FM IF Amp, 12BA6 2nd. AM FM IF Amp., 12AU6 FM Limiter, 19T8 (or)19C8 Discriminator-AM Det-AVC-AF Amp., 35C5 Audio Output.		
POWER SUPPLY	110-120 Volts AC/DC	RATING	.30 Amp @ 117 Volts AC
TUNING RANGE-BROADCAST	540-1620 KC	FREQ. MOD.	88-108 MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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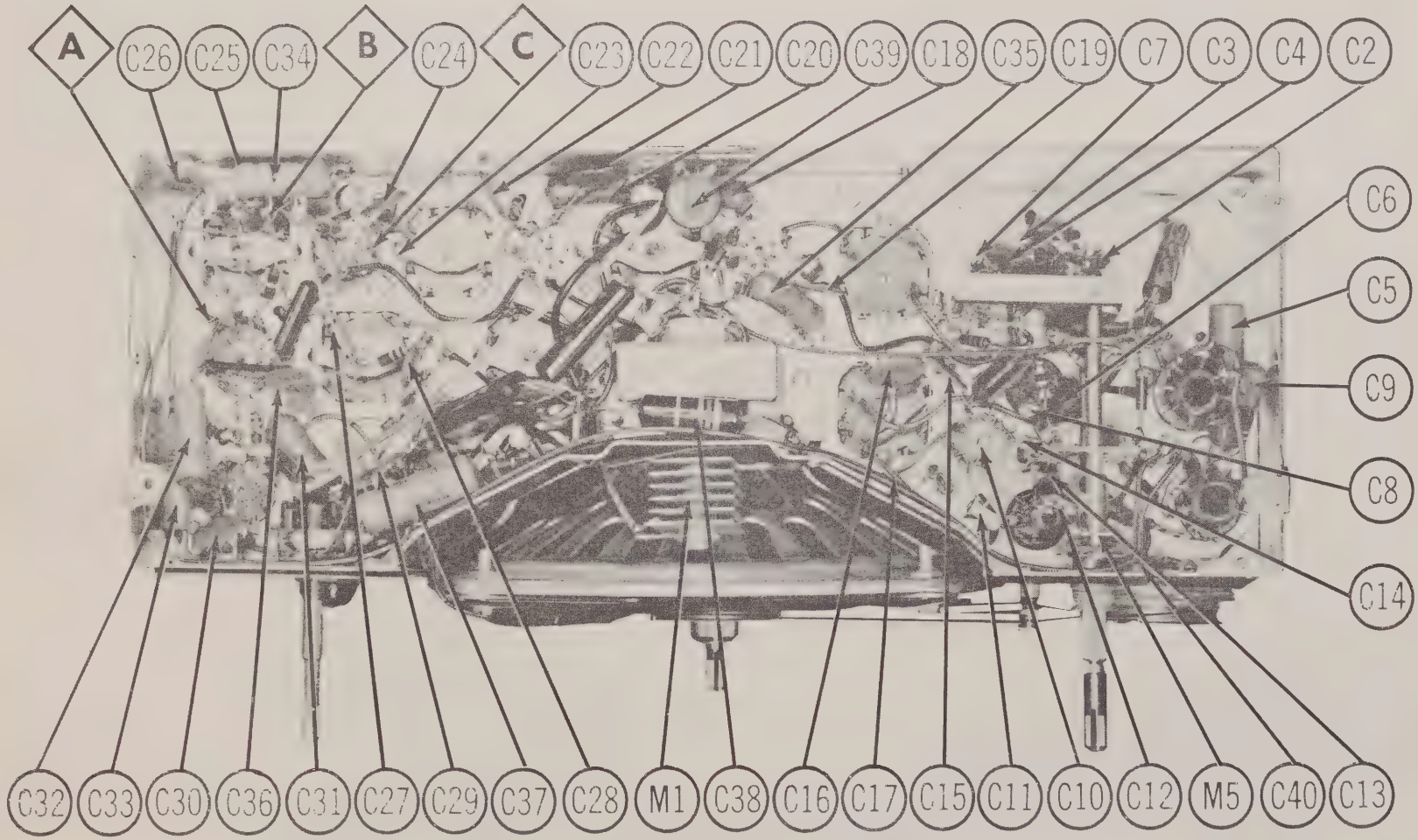
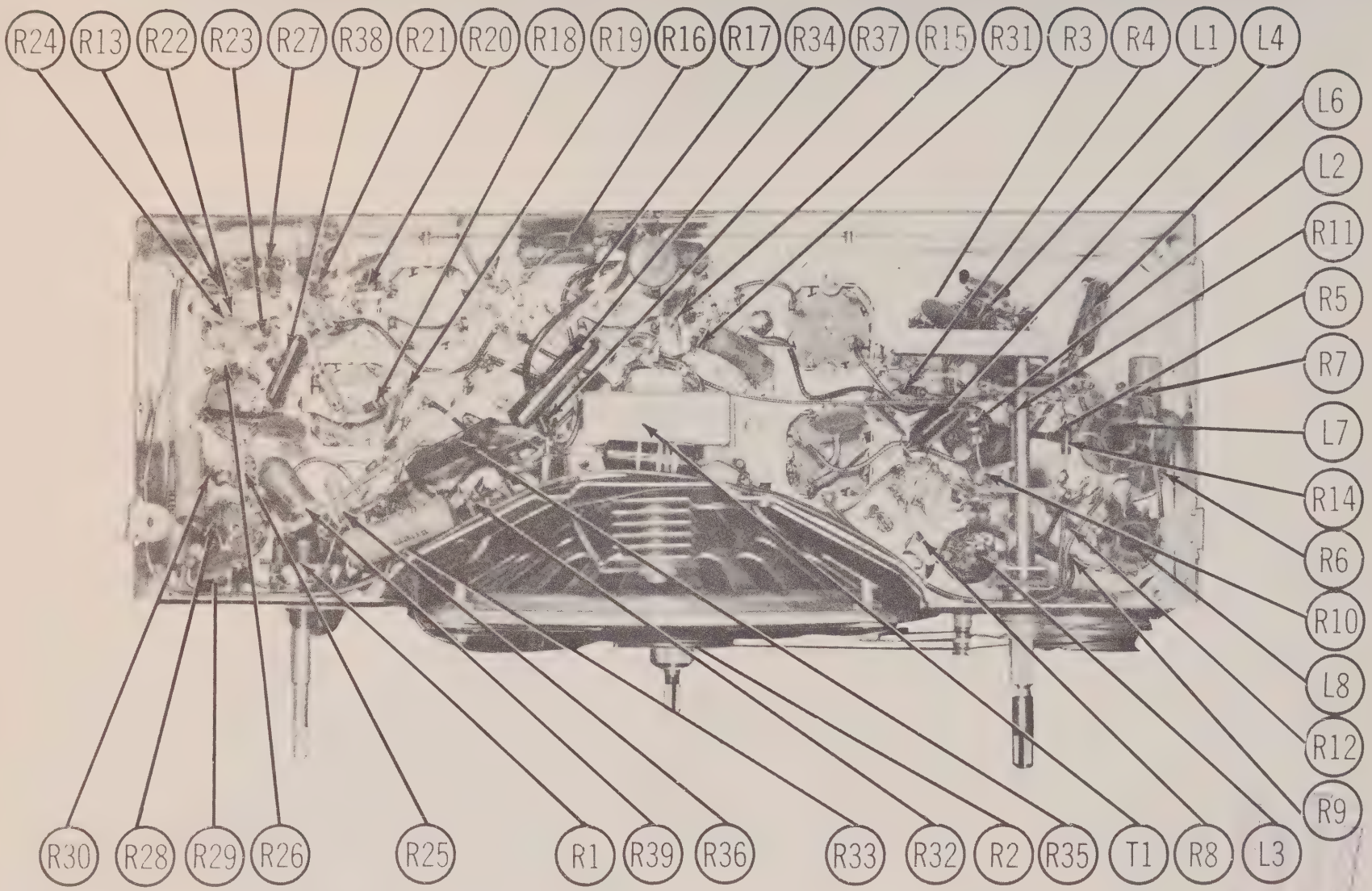
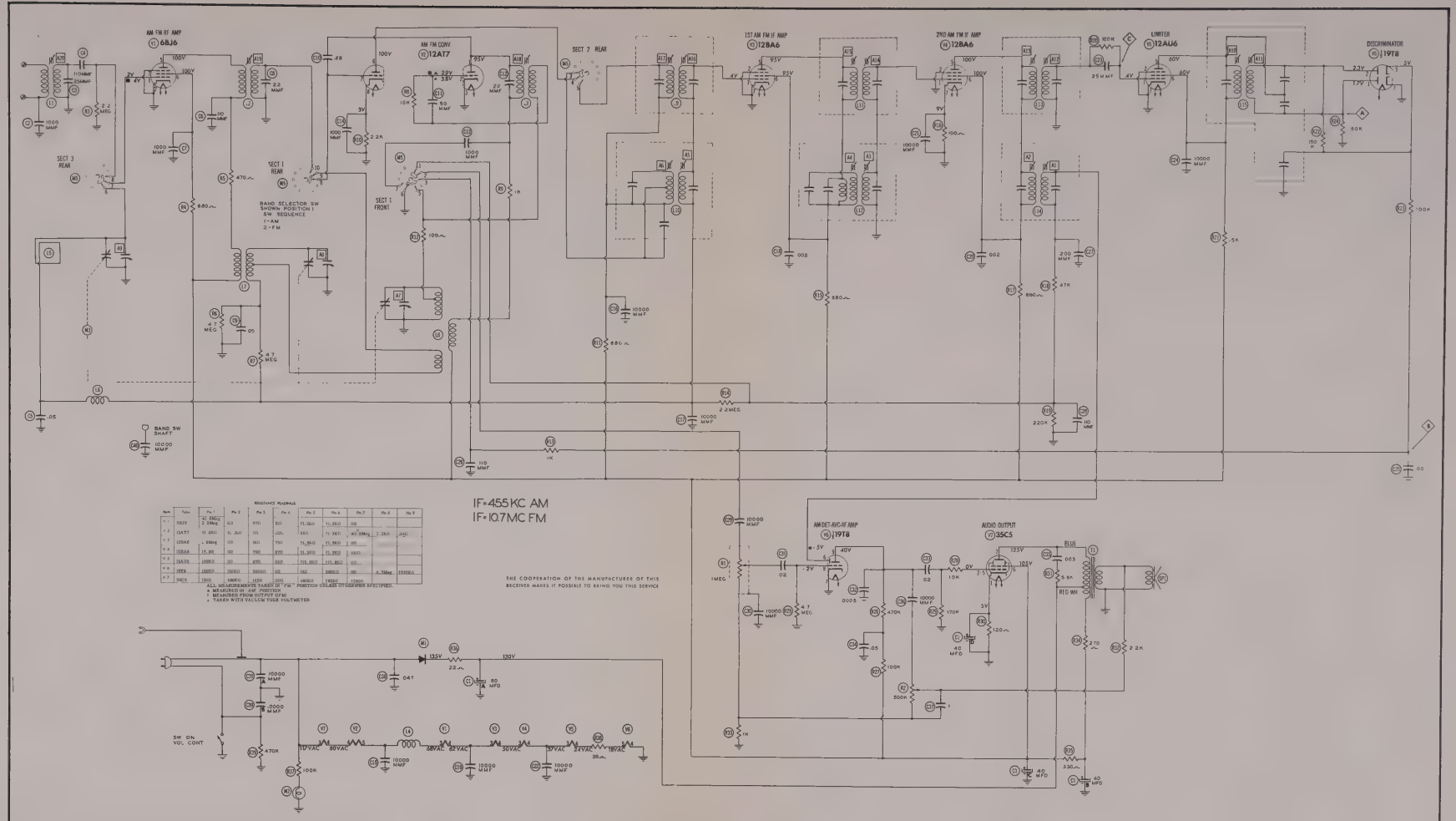


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BJ6	21 .5MEG 2 .5Meg	0.3	970	820	970	11.5K Ω	11.5K Ω	0Ω	
V 2	12AT7	11 .6MΩ	11. 2MΩ	270	205	270	1.1K Ω	1.1K Ω	47 .5Meg	2 .2kΩ .045Ω
V 3	12BA6	1 .6Meg	0Ω	810	750	750	11.2K Ω	11.2K Ω	0Ω	
V 4	12BA6	17. 2M	0Ω	750	870	870	11.2K Ω	11.2K Ω	100Ω	
V 5	12AU6	100KΩ	0Ω	870	550	550	215. 85Ω	215. 85Ω	0Ω	
V 6	1/2 19T8	1MEG	1MEG	1MEG	0Ω	0Ω	1MΩ	1MEG Ω	0Ω	4. 7Meg 1930KΩ
V 7	35C5	130Ω	480KΩ	165Ω	0Ω	0Ω	480KΩ	140Ω	170KΩ	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE SPECIFIED.
a. MEASURED IN AM POSITION
b. MEASURED FROM CHASSIS TO PIN
c. TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURERS OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1- DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2- 8 socket connections are shown as bottom views.
3- Measured values are from socket pin to common negative.
4- Line voltage maintained at 117 volts for voltage readings.
5- Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6- Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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212-10

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer turn tuning gang fully closed and set pointer parallel with base of cabinet.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (grid) of 12AT7 (V2). Low side to chassis.	455KC (400∿Mod)	BC	600KC	Across voice coil	A1, A2, A3, A4, A5, A6	Adjust for maximum output.
2.		Loop	1600KC	"	1600KC	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	"	1400KC	"	A8, A9	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.05MFD	High side to pin 1 (grid) of 12AU6 (V5). Low side to chassis.	10.7MC (Unmod.)	FM	Quiet point	DC probe to point Ⓐ. Common to chassis.	A10	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	"	High side to pin 1 (grid) of 12BA6 (V4). Low side to chassis.	"	"	"	DC probe to point Ⓒ. Common to chassis.	A12, A13	Adjust for maximum deflection.
7.	"	High side to pin 1 (grid) of 12BA6 (V3). Low side to chassis.	"	"	"	"	A14, A15	"
8.	"	High side to pin 7 (grid) of 12AT7 (V2) Low side to chassis.	"	"	"	"	A16, A17	"

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.05MFD	High side to pin 1 (grid) of 12AU6 (V5). Low side to chassis.	10.7MC (450KC Swp)	AFM	Quiet point	Vert. Amp. thru 47KΩ to point Ⓐ. Low side to chassis.	A10	Detune A11 fully counter clockwise. Adjust A10 for curve of maximum amplitude and symmetry as in Fig. 1
5.	"	"	"	"	"	Vert. Amp. thru 47KΩ to point Ⓑ. Low side to chassis.	A11	Adjust so that 10.7MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.
6.	"	High side to pin 1 (grid) of 12BA6 (V4). Low side to chassis.	"	"	"	Vert. Amp. thru 47KΩ to point Ⓒ. Low side to chassis.	A12, A13	Adjust for curve of maximum amplitude and symmetry as in Fig. 1.
7.	"	High side to pin 1 (grid) of 12BA6 (V3). Low side to chassis.	"	"	"	"	A14, A15	"
8.	"	High side to pin 7 (grid) of 12AT7 (V2). Low side to chassis.	"	"	"	"	A16, A17	"

FM RF ALIGNMENT

The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Slugs may be loosened for adjustment by applying a hot iron to the cement.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	270Ω Carbon Resistor	Across FM antenna terminals with 270Ω in hot lead. (Remove line antenna).	98MC (Unmod)	FM	98MC	DC probe to point Ⓒ. Common to chassis.	A18, A19, A20	Adjust in order given for maximum deflection.

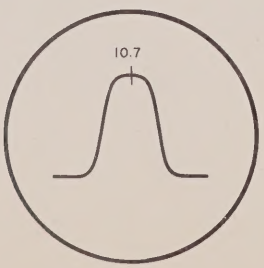


FIG. 1

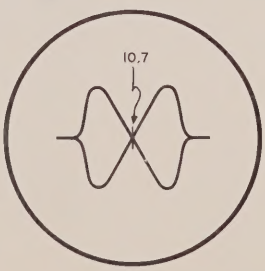


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

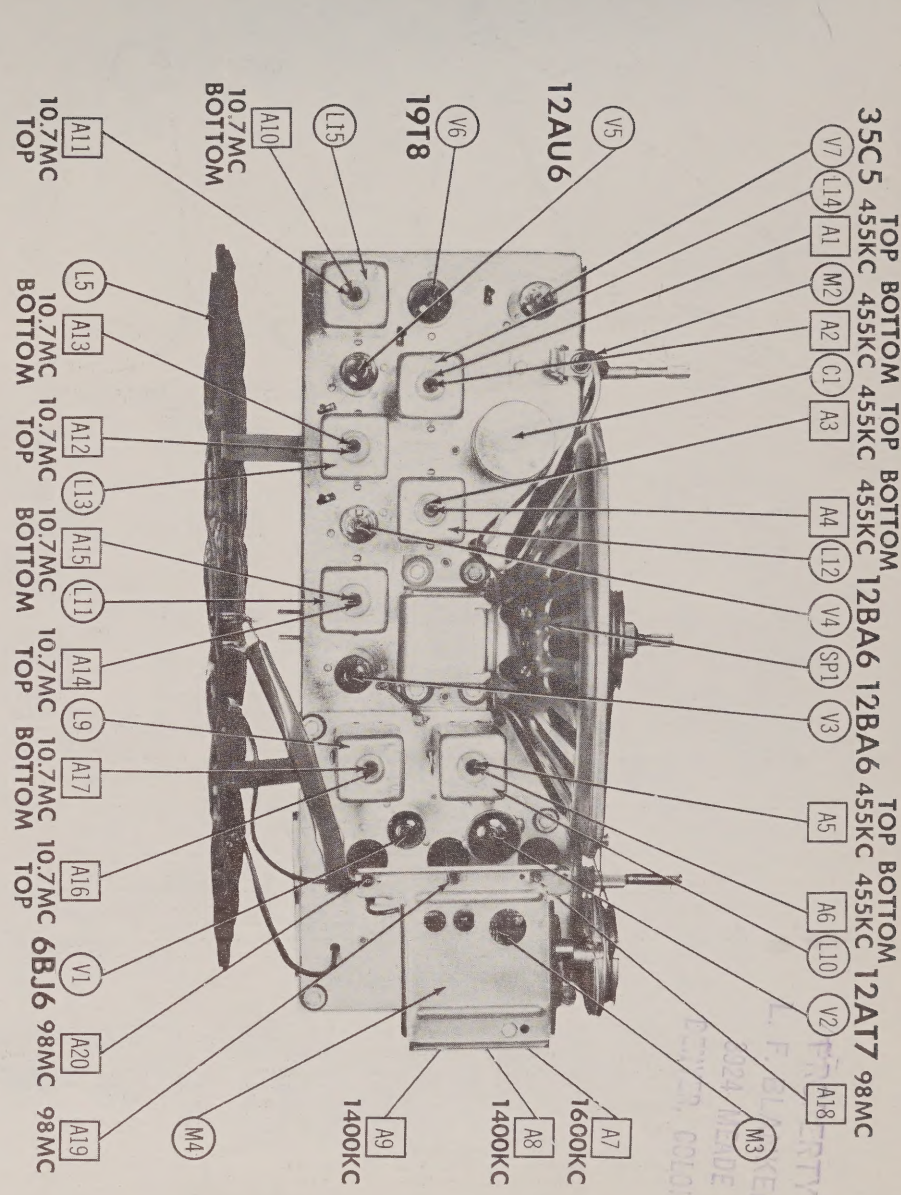
ITEM No.	USE	REPLACEMENT DATA		RTMA BASE TYPE	NOTES
		ZENITH PART No.	STANDARD REPLACEMENT		
V1	FM AM RF Amp.	6BJ6	6BJ6	7CM	
V2	FM AM Converter	12AT7	12AT7	9A	
V3	1st. FM AM IF Amp.	12BA6	12BA6	7BK	
V4	2nd. FM AM IF Amp.	12BA6	12BA6	7BK	
V5	Limiter	12AU6	12AU6	7BK	
V6A	Discriminator-AM Detector-AVC-AF Amp.	19T8	19T8	9E	
B	Discriminator-AM Detector-AVC-AF Amp.	19C8	19C8	9E	
V7	Audio Output	35C5	35C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▬80	150	22-1661	AFH4-37		DO33			R1021	
B	▲40	150								
C	■40	150								
D	40	25								
C2	1000		22-1676	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C3	25		22-2060							
C4	110		22-5	SI110	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C5	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C6	110		22-5	SI110	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C7	1000		22-1676	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C8	22		22-1506	SI22N080			N080-331-220			
C9	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C10	.68		22-1766		TCZ-.68		NP0K-R68			
C11	50		22-1367							
C12	22		22-1506	SI22N080			N080-331-220			
C13	1000		22-1676	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C14	1000		22-1676	SI1000	D6-102	TM5D1	GP2L-102	UC-521	5HK-D1	
C15	10000		22-3	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C16	10000		22-3	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C17	10000		22-3	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C18	.002	600	22-1220	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C19	10000		22-3	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C20	.002	600	22-1220	P688-002	D6-202	PTE6D2	GP2-333-202	PT622	6TM-D2	
C21	10000		22-3	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C22	10000		22-3	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C23	25		22-1507	SI25N750	TCN-25		N750K-250		5TCU-Q25	
C24	10000		22-3	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C25	.001	200	22-1717	P688-001	D6-102	PTE6D1	GP2L-102	PT621	6TM-D1	
C26	110		22-5	SI110	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C27	200		22-1668	SI200	D6-201	TM5T2	GP2K-201	UC-532	5GA-T2	
C28	110		22-5	SI110	D6-121	TM5T12	GP2K-121	UC-5312	5GA-T12	
C29	10000		22-3	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C30	10000		22-3	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C31	.02	400	22-1683	P488-02	DF-203	PTE4S2		PT412	4TM-S2	
C32	.0005	600	22-854	P685-0005	D6-501	PTE6T5	GP2K-501	TP403	6TM-T5	
C33	.02	600	22-830	P688-02	DF-203	PTE6S2		PT612	6TM-S2	
C34	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C35	.005	400	22-1709	P688-005	D6-502	PTE6D5	GP2-333-502	PT625	6TM-D5	
C36	10000		22-3	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C37	.1	200	22-2084	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C38	.047	400	22-1775	489ZX-05		PJ4S47		PT4147	4TM-S47	
C39A	10000		22-2276	BPD-2X01	DD-3-103	TM5DS1	811-01	DC-511	5HK-2S1	
B	10000						811-01	DC-511		
C40	10000		22-3	BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1 Meg	½	63-2822	Q13-137	AG-63-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A
R2A	500KΩ	½	63-2827	Q11-133	AG-58-S	AB-59	U-50	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R3	2.2Meg	½	63-1926	BTS-2.2Meg	
R4	680Ω	½	63-1779	BTS-680	
R5	470Ω	½	63-1772		
R6	4.7Meg	½	63-1940	BTS-4.7Meg	
R7	4.7Meg	½	63-1940	BTS-4.7Meg	
R8	10KΩ	½	63-1828	BTS-10K	
R9	1000Ω	½	63-1785	BTS-1000	
R10	2200Ω	½	63-1800	BTS-2200	
R11	680Ω	½	63-1779	BTS-680	
R12	100Ω	½	63-1744		
R13	1000Ω	½	63-1786	BTS-1000	
R14	2.2Meg	½	63-1926	BTS-2.2Meg	
R15	680Ω	½	63-1779	BTS-680	
R16	100Ω	½	63-1744	BTS-100	
R17	680Ω	½	63-1779	BTS-680	
R18	47KΩ	½	63-1856	BTS-47K	
R19	220KΩ	½	63-1884	BTS-220K	
R20	100KΩ	½	63-1870	BTS-100K	
R21	15KΩ	½	63-1835	BTS-15K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R22	150KΩ	½	63-1876	BTS-150K	
R23	100KΩ	½	63-1870	BTS-100K	
R24	150KΩ	½	63-1870	BTS-150K	
R25	4.7Meg	½	63-1940	BTS-4.7Meg	
R26	470KΩ	½	63-1898	BTS-470K	
R27	100KΩ	½	63-1870	BTS-100K	
R28	10KΩ	½	63-1828	BTS-10K	
R29	470KΩ	½	63-1898	BTS-470K	
R30	120Ω	½	63-1747	BTS-120	
R31	5600Ω	½	63-1817	BTS-5600	
R32	2200Ω	½	63-1799	BTS-2200	
R33	1000Ω	½	63-1785	BTS-1000	
R34	270Ω	2	63-1452	BTB-270	
R35	330Ω	2	63-1202	BTB-330	
R36	22Ω	2	63-1450		
R37	100KΩ	½	63-1870	BTS-100K	
R38	39Ω	1	63-2424		
R39	470KΩ	½	63-1898	BTS-470K	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA					NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	TRIAD PART No.	
	PRI.	SEC.	PRI.	SEC.						
T1	2.3KΩ	3.3Ω	227.5Ω Tap ⓐ 2.5Ω	.62Ω	95-1315	A-3330 ①	A-3031 ①	RO-3 ①		① Drill one new mtg. hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	8"	PM	3.3Ω	49-608	ST-115 Mod. P8-V	8A31	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Ant. Coil	0Ω	0Ω	S-14192				Less slug, slug part # 149-64
L2	FM RF Coil	0Ω	0Ω	S-15743				Less slug, slug part #149-64
L3	FM Osc. Coil	0Ω	0Ω	S-15733				Less slug, slug part #149-64
L4	Fil. Choke	1Ω		S-13997			4612	9.5 Microhenries
L5	AM Loop Ant.	1.6Ω		S-13977				
L6	Ant. Loading Coil	.1Ω		20-337			4608	5 Microhenries
L7	AM RF Coil	3Ω	12Ω	S-16344				Sec. tapped ⓐ 3.6Ω
L8	AM Osc. Coil	1.4Ω	9Ω	S-16345				Sec. tapped ⓐ 3.8Ω, pickup winding -1.3Ω

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (CONT.)

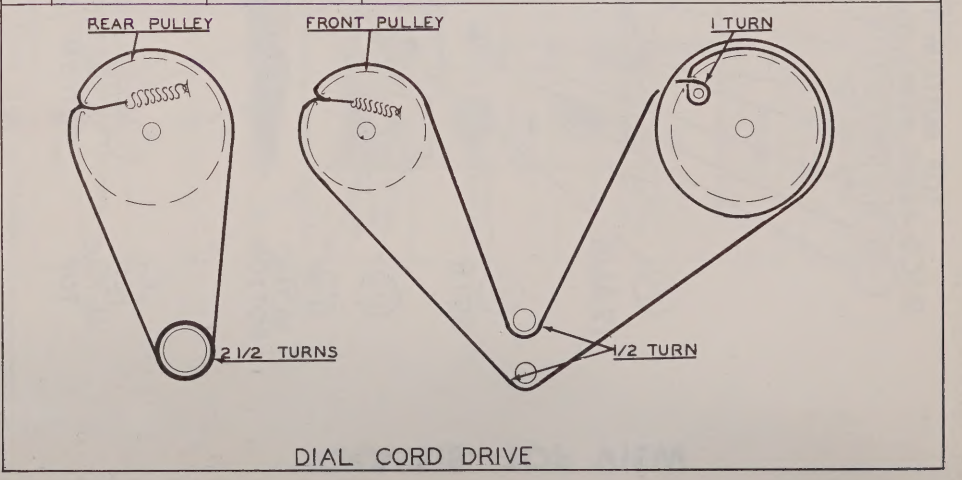
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L9	1st. FM IF	.4Ω	.4Ω	95-1201		FM-251	1451	Pri. tapped ⓐ 5Ω
L10	1st. AM IF	14Ω	18Ω	95-1248				
L11	2nd. FM IF	.4Ω	.4Ω	95-1150		FM-251 *	1451 *	Tertiary winding-.4Ω
L12	2nd. AM IF	17.5Ω	18Ω	95-1249				
L13	3rd. FM IF	.4Ω	.4Ω	95-1150		FM-251 *	1451 *	
L14	3rd. AM IF	17Ω	11Ω	95-1254	16-5742	BC-340	912-C4	
L15	Discriminator	.6Ω	.6Ω	95-1153				

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT	ZENITH PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.
M1	.78A	212-13 212-7 ①	NC5	5M1	1101A	6S100A	100

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Pilot Light	100-105	Type NE51
M3	Tuning Capacitor	22-1677	24-410MMF, 16-213MMF, 18-92MMF
M4	Tuner Arm Assy.	S-14429	FM Tuning
M5	Switch	85-504	AM-FM Selector
	Cabinet	14-1250	Model K725
	Cabinet	14-1397	Model K725F
	Cabinet	14-1393	Model K725G
	Back Assembly	S-17787	
	Back Assembly	S-19382	
	Dial Scale	26-445	
	Knob	46-538	Tuning
	Knob	46-719	AM-FM Selector-Model K725
	Knob	46-960	AM-FM Selector-Model K725F
	Knob	46-957	AM-FM Selector-Model K725G
	Knob	46-855	Tone-Model K725
	Knob	46-961	Tone-Model K725F
	Knob	46-958	Tone-Model K725G
	Knob	S-14129	Off/On Volume-Model K725
	Knob	S-18709	Off/On Volume-Model K725F
	Knob	S-18700	Off/On Volume-Model K725G



DIAL CORD DRIVE